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The Massachusetts Medical Society.

THE SHATTUCK LECTURE.*

SHELL SHOCK AND AFTER.

BY E. E. SOUTHARD, M.D., BOSTON.

ABSTRACT.

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CALLED to the Shattuck Lectureship rather hastily, and found, as are we all, in a general tempo of haste and unpreparedness, I still felt in duty bound, as neurologist and psychiatrist, to speak on the moot topic of my special field, viz., Shell-shock.[1, 2] My predecessor in this old lectureship, my friend and colleague Cannon, was constrained to speak on that other shock,[3] more familiar to physicians and especially to surgeons, namely, Surgical Shock. And Cannon was able, with his marvelous equipment in physiological theory and experimentation, to provide the members of our Society and a wide circle of readers with a fund of ideas and suggestions concerning Surgical Shock, that for obvious reasons I cannot hope to rival for Shell-shock. But in any event, were the second Shattuck Lecture during this war to be given by a neurologist and psychiatrist, the topic simply had to be Shell-shock, even though this self-same Shell-shock be,—to use the neat phrase of another friend, colleague, and physiologist, Porter,—a mere *swash-buckling* disease,[4] this Shell-shock, compared with the more acutely terrible and life-in-the-balance thing we know as Traumatic or Surgical Shock.

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* Read before The Massachusetts Medical Society, at Boston, June 18, 1918.

You will note the bungling phrase: neurologist and psychiatrist. Before the war we hardly knew how to designate ourselves, aware that a neurologist must be something of a psychiatrist and *vice versa*. In the Washington crucible, with all our doubt and scorn of the hyphen, nevertheless neurology and psychiatry have gotten hyphenated: the field of *neuropsychiatry* has been laid out; *neuropsychiatric* units have been planned and established; and *neuropsychiatrists* may be said to exist officially.[5, 6] Whether the neurones or the psyche can be said to have the place of honor in this new group of terms, it would not do to announce: first or last is honorable enough! And with the abolition of the hyphen, a proper traffic may be kept up amongst all parts of the new field of neuropsychiatry. Let us be proud, too, that the Surgeon-General of our Army has established a Division of Neurology and Psychiatry, placed in charge of an eminent neurologist, Colonel Pearce Bailey, well known both for his practical work and for his published book of many years' standing on accidents and injuries to the nervous system.[7, 8] There is no doubt that the Surgeon-General's step would scarcely have been so soon taken had not the news of so-called Shell-shock been brought back to us by an emissary of the National Committee for Mental Hygiene, Dr. (now Lt.-Col.) Thomas W. Salmon.[9] The outstanding statistics, the general color of the situation, and something of the variety of methods of care and management of these cases, were brought to us by Colonel Salmon, who now as Director-General of Psychiatry overseas is already beginning to show results from his ripe organizing ability and his impartial grasp of the opinions of the men and the practical aspects of things—whereunder we must place, under *men* also *military* men, and under *things* also *military* camps and hospitals. The new military machine must needs creak: not all the ideas of the brilliant Colonel Emory Upton have, we understand, been embodied in the machine. To have implanted neuropsychiatric ideas in a perfectly willing but all-too-busy Surgeon-General's Office is greatly to the credit of all in the work, but especially to Bailey and Salmon. But I doubt if even their unremitting labors would have hatched a new division in the Surgeon-General's Office had not the world been apprised of the appearance in the ranks of all the belligerents of an extraordinary malady or maladies called Shell-shock.

Shortly after the initial flurry in which all the belligerents found themselves,—and during which a great number of hypotheses were set up concerning the apparently new disease, shell shock,—more sober reports began to arrive, and the majority of so-called Shell-shock cases came to be recognized as instances of functional neurosis rather than of organic disease of the nervous system. It is well to stress the fact that it is a majority, and not the absolute entirety, of the group of cases *called* Shell-shock that do turn out to be neurotic, since in the first place, puzzling admixtures of organic and functional conditions are by no means uncommon, and since, in the second place, organic disease of the nervous system itself has always been capable, and has proved in this war especially capable, of imitating the phenomena of functional disease. Nevertheless, by and large, the problem of Shell-shock statistically taken seems beyond cavil to be the problem of the neuroses.

But what, after all, are the neuroses? What do we really know about the neuroses other than to say that they are *not* distinguished by the existence of the structural lesions which characterize organic disease of the nervous system? Is not the definition of neurosis purely by negatives? However true this definition by negatives may be from the genetic and general pathological viewpoint, the work of Charcot[10] and in particular of Babinski[11] has yielded a number of positive features from the clinical viewpoint, which to some degree make up for the lack of anything positive in the neurones themselves as studied post mortem. An eminent German has recently declared that the data of this war itself go far to prove some of the long dubious contentions of the Frenchman Charcot[12]; and the work of Babinski during the war has strengthened and developed the conceptions of his master, Charcot, as well as the antebellum conceptions of Babinski himself. Whoever wins the great war from the military point of view, there can be no doubt as to what writers contributed most from the war data concerning the doctrine of hysteria, especially concerning the theoretical delimitation of hysteria from other forms of functional nervous disease: There can be no other answer than that, in theoretical neurology at least, the French have already won the war, if only by means of the remarkable concept set up by Babinski of the so-called *physiopathic* (that is, non-neuropathic and non-psychopathic). But to this novel splitting of the functional neuroses into a psychic and non-psychic group, I shall come back later. For the present, the point I want to make is that, when so much theoretical doubt concerning organic and functional neuropathy holds sway, the practical doubts in the individual case under the varying conditions of military practice and in the upheavals of civilian practice, must be still more in evidence. Case after case described in the literature of every belligerent has passed from pillar to post and from post to pillar before diagnostic resolution and therapeutic success. Colleagues meeting, for example, at the Paris Neurological Society, find themselves reporting the same case from different standpoints,—the one announcing a semi-miraculous cure of a case which another had months before claimed only as a diagnostic curiosity. In the midst of such discussions and controversies, there must inevitably be a renaissance in neurology.

In England, too, controversy has not been lacking, and particularly in the therapeutic field, the believers in sympathy and firmness,[13] in the electric brush for startling a patient out of his hysteria,[14] and in the process of slow rationalization by the patient of his interior ills,[15] have all raised their voices. The world has naturally learned a thing or two in these latter years, and so does not follow the lure of 100% in the statistics offered.

What sort of thing faced the military surgeons? It cannot be the province of this lecture to rehearse the cases in detail, and indeed any small selection, such as a score or even fifty or a hundred, of cases could give but a ragged and pale impression of the situation. I shall limit myself to the dangerous device of small points and excerpts from a considerable variety of cases.[16]

Shell bursts and other detonations can produce *hemorrhage in the nervous system and in various organs without external injury.* Thus a man died from having both his lungs burst from the effects of a shell exploding a meter away. Hemorrhage into the urinary bladder has been identically produced. Lumbar puncture yields blood in sundry cases of shell explosion without external wound, and Babinski has a case of hematomyelia produced while the victim was lying down, so that the factor of direct violence through fall can be excluded. In sundry cases not only blood but also lymphocytes have been found, sometimes in a hypertensive puncture fluid.

Accordingly, *in cases of alleged shell-shock, the hypothesis of focal structural damage to the nervous system or its membranes has to be raised.*

A herpes or the graying-out of hair overnight can suggest organic changes. A case may combine lost knee-jerks (suggesting organic disease) with urinary retention (suggesting functional disorder).

Accordingly, *in cases of alleged Shell-shock there may be a combination of structural and functional disease;* but, when the problem is statistically taken, *the majority of cases of alleged Shell-shock without external wound prove to be functional, as indicated by their clinical pictures.* Thus, after a mine explosion, a man was hemiplegic, tremulous and mute. After sundry vicissitudes, the tremors were hypnotized away. Then the mutism vanished, to be supplanted by stuttering. Finally the hemiplegia remained. So far as the mutism and the tremors went, this man might belong in the majority group of Shell-shock cases, namely, the functional group. Assuming the hemiplegia to be really organic, we should regard this man as a mixed case, organic and functional.

There is a group of war neuroses, especially clearly brought out in cases of ear injury, *in which the functional disorder surrounds the organic as a nucleus.* But these "periorganic" neuroses are no proof that the neuroses in question are organic in nature. Hysterical anesthesia, paralysis, or contracture may occur on the side of the body which has received a wound: *the process of such a peritraumatic disorder is, nevertheless, a functional process.*

Sometimes the symptoms are very general. Meige's returned soldier, an artist, wrote: "I went to a novelty shop. . . Everything. . . a contrast to our trench misery. I was. . . like a schoolboy on vacation. All of a sudden I felt that my strength was leaving me. I stopped talking; I felt a bad sensation in my back; I felt my cheeks hollowing in. I began to stare and the trembling came on again."

Gaupp's German soldier wrote in a private letter, *e.g.:* "A soldier scolded me because I was running senselessly up and down; finally I got into the Leipzig train. . . everything then got more and more confused in me; I heard my mother call; then I heard shooting again; and finally I was entirely confused. I came to my senses in a room in the station, and towards evening was frightened again at a loud noise somewhere, or a train passing. Then I was told what I had done in the train. I had cried out and raved, tried to get out of the car, called for my father and mother, wanted to go home, imitated shooting; allowed myself to be calmed a little, but began to shout again at very loud noises. When I was out of the train I bit a soldier and tore his whole coat open, so then I was carried to the hospital here in an auto."

After listening to the French artist's account of his Shell-shock tremors and the German soldier's account of spells, possibly of an epileptoid nature, on his homeward way, let us turn to the more stolid account by a British soldier, a case of Batten's. The man wrote his tale out in a state of complete mutism. Plunging into the middle of his story: "The next place we went to was Rue de l'Épinette and we had an awful time there, just before Christmas. We went into the trenches and we were up to our middle in water, and in some places it would have taken you over the head. We got relieved by the Royal North Lancs. . . We were just making some tea when the fall-in went and we were told that the Germans had broken through the North Lancs. . . If the Germans had attacked again, we could not have tried to shoot as we were hardly able to stand for the cold and with the wet kilts on our legs it was awful. We got nothing to eat except three biscuits that some of the men went out and got. When we came out of the trenches on Christmas Eve, we all looked like old men and a lot of them had to be carried. . . The next place we were at was at that big fight at Neuve Chapelle. . . We got the trench all right and I got orders about 4 p.m. to go back to our own trench and bring along the belt-filling machine belonging to the machine gun. . . . We got into our trench all right and I got this box on my back and started back to the trench. I was just stepping out of the trench when a shell burst just over my head and I went down. When I came to my senses I was lying in our support trench where I had been carried by two of the men of the Fourth Black Watch. One of them said something but I couldn't hear him and I tried to tell him so, and then I discovered I could not speak."

So much will suffice to give some idea of trench situations and their sequelae. The literature contains beautiful examples of narratives elicited under hypnosis in which all tho forgotten details are brought richly back.

Schuster claims a hypersensitive phase after the shell explosion, during which time the patient is particularly subject to hysterical symptoms. A good many cases specially reported by excellent observers demonstrate that the same kind of hysterical or neurasthenic effect may occur in the absence of any obvious shell explosion, emotion, or somatic disorder of any sort. What is the nature of these disorders? The literature is practically unanimous on the point: *We have to do merely with the classical problem of the neuroses,* and when all the data are some day united, we shall doubtless know a great deal more about the neuroses. That the process, whatever else it does, is rather apt to pick out pre-existent weak spots in the patient (the habitual gastropath becoming subject to vomiting; the old stammerer stammering once more or even becoming mute; the man always "hit in the legs" by exertion, now becoming paraplegic) is obvious. The striking instances in which an old cured syphilitic monoplegia, or an old hysterical hemichorea, come back under the influence of shell explosion in precisely the limits and with precisely the appearance of the former disease, indicate how various a factor may be the *locus minoris resistentiae.*

Would that the medical profession understood these neuroses at their true value! Only too frequent is the impression on the part of the profession that *imaginary symptoms* are by the same token *non-existent!* I have even heard a physician well trained in somatic lines say that Shell-shock did not exist because Shell-shock was nothing but neurosis, and neuroses were characterized by imaginary symptoms,—accordingly neuroses, being imaginary, do not exist! All of which reminds us that many of the profession were entirely skeptical when Charcot made his original observations. Some men here in America felt that, whereas hysteria might occur in Paris, it did not occur to any extent in America. The Shell-shock data of this war will abundantly prove to the profession the existence of the neuroses, and I feel that physicians will have to brush up their ontology to the extent of conceding that *a symptom may be* in a sense *imaginary and yet not* in any sense *non-existent.* Babinski points out a case of *hysterical* paralysis of a leg which led the patient to lean so heavily upon his arm as to produce an *organic* crutch paralysis. It would be to no point to argue that the hysterical paralysis was here non-existent. Of course we shall have to meet the false analogies drawn from methods of cure. If a paralysis can be cured in a few minutes by the electric brush, or by hypnosis, or on emergence from chloroform, or by some other modern miracle, is it too much to ask the *profession not ever to say* that this rapid and seemingly miraculous *cure was brought about because the disease was non-existent?!*

The fact that a soldier may get war dreams though he has never been in the fighting zone and never by any chance observed the circumstance of war, or the fact that a man can become mute on the second day after a shell explosion because the night before he had dreamed of some hysterically mute patients on his ward—these facts again, although they argue a psychogenic origin for the phenomena of so-called "Shell-shock," do not at all mean that the actual physical explosion in other cases may not have its very tremendous importance in those other cases. This is shown by the exceedingly interesting phenomena of localization or determination of symptoms to a given region under the special local influence of the explosion. Thus, in the schematic case, an explosion to the left of the soldier produces anesthesia and paralysis on the left or exposed side. Now and again a case will show such anesthetic and paralytic phenomena upon the side exposed to the explosion and some hypertonic, irritative phenomena upon the other side. One gets the figure in one's mind of an organism fixed, immobile and numb, on the spot by the explosion—and the other half of the body, as it were, attempting to run away from the situation. One side of the body, as it were, plays 'possum, the other tends to flight.

Of course these physical phenomena should not blind us to the emotional ones. Now and then the multiple causes of a case may be analyzed as, for example, one of blindness in which a series of factors emerged, such as excitement, blinding flashes, fear, disgust and fatigue. I cannot here go further into these details, and I need no longer insist upon the fact that *surrounding the problem of Shell-shock means surrounding the problem of nervous and mental diseases* as a whole, and that thus to be a shell-shock analyst means to be a neuropsychiatrist. In the first place, the organic problems of the nervous system are brought up constantly in differential diagnosis, but the functional problems divide themselves up in a perturbing manner into a fraction properly termed the "psychopathic" (that is, after the manner of hysteria), and "non-psychopathic" (that is, after the manner of reflex disorders of Charcot, newly named "physiopathic" by Babinski.)

The judgment, what we in America should do about all this, was none too easy, particularly as, besides the mission of Col. Salmon, above mentioned, no scientific commissions were sent abroad, and no authoritative neurological workers from England or France had appeared upon our soil until a quite recent date. The Research Council is now under way, however, and in its second annual report chronicles as a special achievement of the Division of Medicine and its sub-committee on psychiatry, that a laboratory for the study of Shell-shock is to be established overseas.[17] The Council has also announced that it has under consideration plans for sending commissioners and for receiving distinguished visitors dealing with the great topics of the war, among which, doubtless, Shell-shock will assume a high place. Before we contemn too lightly tardiness in these matters of scientific inter-communication, we must consider our otiose past. It is now some twenty-five years since our great paleontologist, E. D. Cope,[18] wrote concernedly over the future of thought in America. He pointed out how the European had come to America "to escape loathsome tyranny, political, social, or theological, or to better his conditions of physical living." Physically, Cope went on to say, the transplanted European has bettered himself; but has he bettered himself mentally? "What," wrote Cope, "is the outlook for the American? Will the process of natural selection only, the 'devil-take-the-hindmost' doctrine of Darwin, be sufficient to develop the higher mental faculties, or having developed them, enable them to survive and to become general or not?"

"In the first place, we lack in America," continued Cope, "the great stimulus to mental progress,—international jealousy and emulation. In this respect we are situated very much like the Chinese, but if anything, less favorably." If what Cope said was true twenty-five years ago, it is, sad to say, still truer today; and indeed in our own specialty of medicine, and in my particular small corner thereof,—neuropsychiatry,—instead of hitching our wagon to the international star of jealousy and emulation, we have reversed the process and hitched our stars to the Teutonic wagon; and I can say for the nomenclature and terminology of mental diseases with the hearty approval, no doubt, of the body of the profession, that the creaking of that wagon is still heard in the land; and this despite the fact that our English vocabulary for the things of the mind, thanks to the philosophical speculations of the eighteenth century, is heavy enough in itself to make any wagon creak.

But when it came to the point of sending our neurologists and psychiatrists abroad to plunge into the midst of a friendly but none the less sturdy rivalry and emulation with our English, French, and Italian *confrères,* what was to be done? Hereupon the work of the National Committee for Mental Hygiene, with its organization planned and perfected by Lt.-Col. Salmon, and carried on with acuteness and impartiality by Dr. (now Major) Frankwood E. Williams, stepped in to do what it might. The last time I heard statistics, I learned that over 360 nervous and mental doctor-men were on the rolls of the Division of Neurology and Psychiatry. Some of these, being comparatively well trained both in neurology and in psychiatry, were plunged forthwith into the service. You who have scanned the newspaper lists have seen something of their assignments to camps and hospitals in this country and overseas. But many of these candidates for work in neuropsychiatry and for the onerous work of divisional and post psychiatrists, had to be specially trained. Thereupon the Surgeon-General's Office, through the Division of Neurology and Psychiatry, took a hand and sent many of these men for training to different institutions, including the all-too-few psychopathic hospitals and psychiatric clinics of a nation somewhat tardy in these matters. The men who needed brushing up in neurology were sent to such centers as the Neurological Institute in New York, and the Post-Graduate Neurological Clinic in Philadelphia. The men who needed brushing up in psychiatry were sent, for example, to the psychopathic hospitals at Ann Arbor and at Boston.

It was while I had the task of giving brush-up instruction to a number of the Surgeon-General's men, as military director of the Psychopathic Hospital in Boston, 1917-18, that I began that collection of cases which gave me the courage to speak to you today concerning shell shock in its intra-bellum and post-bellum aspects. In the collection of upwards of 700 cases from the literature, 589 of which are embodied in the published series, I found case after case which seemed to be far more informatory than any of the dry-as-dust dogmatic statements which I found in sundry places.* Had not my valued colleague in bibliography, Private Norman Fenton, been sent off on his proper military duty in Base Hospital No. 117, we might possibly be reading cases yet. However, I am bound to say that with the publication of the books in the *Collection Horizon* and their publication in England and America under the editorship of Sir Alfred Keogh, many of the principles are beginning to stand on their own feet and to deserve the honor of coarse print.

I make no doubt that this plan has already made itself effective, and that the men thus trained will not only equip themselves splendidly in the war, but also, many of them at least, return to neuropsychiatric work on a high level in post-bellum days. It is no secret, however, that the National Committee for Mental Hygiene and the war work committees of the American Neurological and the American Medico-Psychological Associations had to drag the depths of our profession for suitable men.* All honor to their concrete results!

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* I bear in mind a phrase of Justice Holmes in comment upon the Langdell case system as used in the Harvard Law School (which system, as you may remember, gave Cannon his idea of teaching medicine by the case system), that nothing taught by the case method lies "dead before you on the printed page." In passing, I may make the obvious remark that the Langdell case system as applied to the law was nothing more or less than the only method in high esteem in medicine for many decades, nay, centuries, and that the readers of Sepulchretum Boneti, or even of such works as those of Andral, may see to perfection (so far as the lights of those days permitted) the workings of the case method.

Well, if we come back with our shields and not upon them, all these matters will doubtless be righted after the war. For the moment, our neuropsychiatric contingent appears to be doing its job well; we learn that some 20,000 men have been excluded from the draft army for reasons lodging in the nervous system, and among these we hope we have excluded many a candidate for neurosis, functional or organic. To be sure, we must not raise the hopes of the public too high, since straightforward evidence from the various belligerents shows us that perfectly normal men, so far as any physical or mental test can call them so, and so far as any investigation of their heredity and their acquired soil can determine, have, nevertheless, become subject to some of the classical neuroses. We must now erect the hypothesis that *the classical neuroses may* in some, though certainly a minority of cases, *afflict normal men.* Under the war conditions of investigation touching the family and personal histories of the men, perhaps we should not be too sure of this hypothesis; but the army records will after the war allow us to make or break the point forever and thereby throw the clearest light upon the vexing problems of industrial medicine, wherein progress in general has been so slow on account of the partisanship of the corporation and plaintiff's attorneys. At all events, the neuropsychiatrists, aided by the psychologists with their elaborate mental tests, have done their best to prevent Shell-shock so far as the problem consists in excluding nervous and mental weaklings.

Overseas, meantime, many men are at work in the English, and some in the French, hospitals studying the methods of their allied *confrères.* These men are for the most part of the ardent younger strain, though in some cases older men with established reputations have been able to go. We hear that most of the medical profession in every belligerent country, except our own, has in a sense been mobilized for the work.* If we are to take our place amongst what Mr. Usher has recently termed "the Atlantic powers," we must in all fields thoroughly mix our thinkers and workers with those of Western Europe, and the task which faces medicine is so great that a peculiarly intimate commixture, or indeed, a general *compounding,* is on the cards for physicians. And, whereas in sundry branches of medicine we have a good deal to teach our trans-Atlantic fellow physicians, I am afraid that in the field of neuropsychiatry the flow will not be quite that way.

Perhaps I here talk too much of futures for American neuropsychiatry; but any one who has dealt with the nervous and mental flotsam and jetsam in civilian practice, say in the wards or Out-Patient Department of the Psychopathic Hospital, or in any similar zone of social advance, must know that the fate of the individual patient,—whether an ex-soldier or an industrial wreck,—will depend upon the community standard in the matter of its medical experts.

We are all very proud of the part our country is taking in reconstruction of an orthopedic nature.[19] Perhaps we take our orthopedists here in Boston too calmly. It would not do to praise orthopedics too highly in the trolley car, for the man across the way might turn out to be an orthopedist, and it would never do to praise a Puritan to his face! No one but knows that the structural side of human refitting will be done quite to the Bostonian taste during and after this war, and I do not need pause in laudation of the competent men in the reconstruction hospitals and their eager adjuvants, the occupation-workers who are now being trained.

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* In passing, I cannot help commenting on how tardy, nay, delinquent, our nation has been in its provision for the development of neurological, psychiatric and neuropathological research. For a nation that could produce a Brown-Séquard and a Weir Mitchell our record is unhappily poor. Some day, when not overborne by deficiencies in the concrete, I hope to write a letter on the neglect of research upon the brain by the great American foundations. Perhaps so great an alarum as Shell-shock itself may serve to waken these foundations up. One day I remarked to one of the great foundation men: since there could be no question that the brain is the great tool of research, why should there be any question of turning that research tool upon itself? The expected answer came: "My dear fellow, you are in no worse case in pleading for your science than all the others pleading for theirs." I went away, and thereafter looked about me to see what lines of research were neglected more grievously than those of brain and mind, and I found no other branch in so stepmotherly a bed. I will make one exception. Possibly pharmacology is a branch as grievously neglected; but there again, very possibly we have hitched our stars to Teutonic wagons, or, easier still, bought wagon-loads of German drugs and let it go at that. Perhaps the neurologists and pharmacologists might make common cause in this plaint, since the neurologists, at all events, would greatly benefit by even the smallest advance in pharmacology.

* What our higher councils may determine in this matter for our own country I do not know, but, at all events for the neuropsychiatric branch of the profession, it would seem within the bounds of reason to consider a plan by which the entire body should be alternated in work overseas and on this side, so that the whole group shall be permeated with the lively new ideas of the allied world. Not being for the moment even a contract surgeon, I can safely say that little or nothing, so far as I can see, prevents the execution of such a plan except two matters, logically microscopic in size, but looming very large in the military mind, *viz.*: The impropriety of high military rank for reserve men of high civilian achievement, and the insistence upon giving applicants no promises concerning their futures. I have heard these questions argued in half a dozen cities by men in and out of the military service, and, for my part, I find the whole matter reduces in the end always to one phrase: *"They will never do it!"* Who the *they* may be, I shall leave to your imagination, though I am sure the dreadful Juggernaut is not the Surgeon-General's office.

In another direction, the neuropsychiatrist also looks for aid, namely, in the direction of psychology.[20] Not only in the matter of exclusion of unlikely draftees, but also in the matter of vital adjustments, we must turn to psychology. It is not (if I may venture into this thorny path) that we are to hand over our function as diagnosticians and therapeutists to psychologists, any more than we hand over these functions to chemists. After all, psychologists and chemists, though they represent sciences in some sense greater, or at all events more general, in their scope than medicine, are not and inevitably cannot be diagnosticians of diseases. Nothing in the Grand-Palais in Paris or elsewhere is any better probably than the work at Hart House, that building which was to have been a students' club in the University of Toronto, but which now houses the shrewd devices and human enthusiasm of the psychologist, Prof. A. E. Bott, who seems to combine with his psychology an orthopedic and neuropsychiatric sense which would do credit to a doubly-trained (orthopedic and neurological) physician, were Dr. Bott such and not a psychologist merely. Some of Bott's ideas he gratefully refers to the psychologist Franz, the scientific director of the Government Hospital for the Insane, St. Elizabeth's, Washington.

The divisions of the Surgeon-General's Office devoted to neuropsychiatry, to reconstruction, and to psychology, not only theoretically must, but practically do, coöperate to the end of reconstruction not only of the so-called "Shell-shockers," but to every sort of neuropsychiatric case.

I intend now to turn to some considerations concerning the term "Shell-shock" itself, a term which is, and ought to be in some senses, taboo. I shall follow my discussion of the term with some account of the relation between Shell-shock and the main orders of mental diseases, showing that the Shell-shock problem cannot be surrounded except by the widest and deepest neuropsychiatric processes of diagnosis and therapy. First, now, concerning the term *shell-shock*. William James called "pragmatism" a new name for old ways of thinking. Yet the term pragmatism was such an exact and denotative rendering of those old thinking ways that no one can now ever go back of the new term. But what can be said for the new term *Shell-shock?* Is it not a new name for old diseases, and a new name so inexact and non-denotative that nothing but regret could follow its scientific adoption? Everybody concedes that the diseases called Shell-shock are as old as medicine, and only to be distinguished as more frequent in this war than ever before, and as occurring in the male in unexpected numbers. But more increased frequency does not necessarily argue anything scientifically novel about these diseases, and there were always enough examples of these affections in the rougher sex to permit sufficient study.

When James chose the name pragmatism for some ways of thinking, it was the deep and dialectical professor finding a term for common views. The unknown inventor of the term *Shell-shock* was presumably neither deep nor dialectical. He was in some sense doing the opposite of James' exploit with the term pragmatism; he was finding an inexact and non-denotative term, *i.e.*, *Shell-shock*, for the more or less exact medical concept, *neurosis*, a term which, just by reason of its Hellenism and its *high-browism*, he could not understand and would not use.

The term *Shell-shock*, let us grant, is inexact and denotes little or nothing. But why drag in exactitude? Above all, why lug in denotation as an aim in the present world? Shell-shock may denote nothing, but it connotes everything the laity desires. Yes, you reply, but does it not connote and suggest too much? Shell-shock denotes, to say the least, *shocks* and *shells*—yet we know shell shock *sans* any shock and *sans* any shell, nay *sans* either shell or shock.

Let us drop for the nonce what the term *denotes*. Does it not *connote* the war? What better symbol of the great war, by and large, both as war and as the greatest of wars, than the shell,—the shell of powder, the shell of fire, the shell of death by gas, the shell of tears, the shell of sneezing that strips the mask for death, the sea torpedo, the aerial torpedo, the mine, the shell of the psychological supergun, the shell that sank the *Lusitania*, and above all, the shell of fear, the shell of the German's own psyche which he loaded in fear with all the powder and fulminates and gases that forty years of his fear could generate. Nay, the greatest of all these constituents was undoubtedly fear, and the whole of *Mitteleuropa* for these many decades had kept loading and loading itself—one giant self-bottling torpedo of fear which we poor free-swimming Yankees sometimes mistake for the aggressive anger of the crook among nations. But I am of the belief, and some Americans who stuck it out for months in Germany earlier in the great war have told me so, that fear is the bottom emotion of the Teuton and that, in the accursed filling of the great Teutonic torpedo lying there in the midst of Europe, the Kaiser and his crew served but as catalysts and enzymes, not as the ingenious devils we picture them. Why, the whole stupid game, psychologically speaking, is to implant in *us* fear and ever more fear, and every message, and every act is a shell to give us fear—and fear of what? Of real shells, of murder, of torture, of rape. The Belgian triangle of horrors, the *Lusitania* itself, are nothing but samples of what would serve the home market. Do you think the Germans really were *not* afraid of the Belgians, *not* afraid of Russian mobilization, *not* now afraid of our American shells and the new gases they will contain? I repeat, the Germans are born to more fear than we free-swimming Yankees readily understand, and the shell, whether of explosives for individual use, or the shell of the great god Thor's fear in the face of the greater God—the shell remains the best symbol and token of it all.

From the shell as connotative prince of terms in this war, let us turn to the second theme of this new slang term, *Shell-shock*. If the prototheme, shell, is often to the naked eye absent, the deuterotheme, shock, is in still worse plight. One of the most telling of observations by the neuropsychiatrist, working with his division of troops, is the observation, long antecedent to the beginning of obvious Shell-shock, of sundry premonitory symptoms. In fact, the divisional neuropsychiatrist, in his heart of hearts, hopes to stave off sundry, if not of course all, cases of Shell-shock by proper preventive measures. One hyperenthusiast, at least I think him so for this war and this generation, indeed hoped to prevent by educative talks to soldiers the development of Shell-shock. But Shell-shock is doubtless not theoretically so easy to suppress out of civilization as would be, *e.g.*, syphilis.

In a shock there should be some suddenness, and I am bound to admit that many a case of Shell-shock, even if the actual shell appears on the scene, seems to develop without that quality of attack or seizure that the term denotes.

Shock was, in fact, at the outset, a military term. Although we now define a shock as a sudden and violent blow, impact, or collision tending to overthrow or to produce internal oscillation in a body subjected to it, and sometimes even mean by shock the actual disturbance of equilibrium or internal oscillation resulting from such blow, impact, or collision, yet the term before it obtained this rather figurative use, was a military term for an attack.[*] Besides its military use as a term for the attack, we find the term in use both for mechanical and for moral agitations and commotions. I find that beyond the mechanical definition above given, Murray also defines shock as a sudden and violent effect tending to impair the stability or permanence of something—a damaging blow (to a condition of things, a person's health or constitution, an institution, a belief, etc.). But you will observe that a shock, in the spirit of our language, may be either mechanical or moral, but the suddenness of a shock remains its one constant feature, which it has borne perhaps from tree-stump days through barbarian assaults, down to mechanical and electrical effects, on the one hand, and moral and emotional effects on the other.

Now, in the Shell-shock group, the French very neatly distinguish what they term *états commotionnels* from *états émotionnels*. They think of the *états commotionnels* or commotional states much as we think of *commotio cerebri*, that is, of a physico-chemical happening in the brain of an essentially curable (or reversible) nature; that is, of something that falls short of being, as they say, *lésionnel*, namely, as bringing about a structural lesion. That is, they distinguish a brain with a physical focal lesion from one which has sustained a physical jar or commotion, and they distinguish the effects of both of these from the *états émotionnels* or emotional effects of an injury. The nomenclature here brings out one of the most fundamental difficulties in the whole field of so-called Shell-shock, namely, the distinction between structural conditions, microscopic or macroscopic, on the one hand, and functional conditions of a psychopathic nature, on the other. The *commotion*[*] would affect the neurones themselves in some perhaps invisible but still genuine physico-chemical way, whereas the *emotion*[*] would affect these neurones merely after the manner of the normal emotional life, except that the neurones would perhaps deliver an excessive stream of impulses. Of course, when we get down to the undermost level of this question and seek to distinguish between invisible physico-chemical changes in neurones of a morbid character, from invisible neuronic changes and relations of a quasi-normal character, we find ourselves plumb in the midst of sundry deep questions, not merely of molecular physics, but even of metaphysics. Crile has driven some of these speculations out into the open, where they may at least be examined on all sides and disposed of according to various views. For practical purposes, we may think of what the French call *états commotionels* as tending toward the naked-eye lesion in their nature, whereas the *états émotionnels* are something a good deal more subtle.

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[*] In fact, like many roots, the origin of the root of shock is wrapped in obscurity. The French word *choc* was borrowed by various languages for military purposes, though some of the French lexicographers gallantly hand the term over to Old High German for "swing," and some of the German lexicographers, perhaps dodging such military renown, passed the term up to Old French for "the stump of a tree," as suggesting somehow that the attack of troops felt a bit like the pioneer's attack on tree stumps. However this may be, the figurative use of the term has gone beyond all military circles, only now to return in the term "Shell-shock."

Shells were made, it appears, long before the idea of shock effects within the nervous system came into the general mind; thus in the seventeenth century, a gunnery book speaks of filling "small shels with fine gunpowder," and the Thomasson tracts in the British Museum (quoted by Murray) make this curious observation sometime after 1640: "'They swear they will never fight more against guns that shoot twice,' meaning the two cracks, the mortar and the shell." But these original pacifists did not yet have in mind, so far as the lexicographers teach us, the effects of shock. We gather early in the seventeenth century the mechanical idea at the bottom of the term shock.[†] Whether these dictionary straws indicate which way the wind blew in transferring the mechanical idea over into the moral one, I do not know; but it is very plain that the sense of the term shock is embedded in our literature in both significances: the *mechanical* and the *moral*. In the medical literature, Abernethy already in 1804 spoke of the shock of an operation. Morris wrote in 1867 a practical treatise on shock after surgical operations and injuries. The relation of this surgical shock to the nervous system was probably implied in the term at first.[*] But while the medical mind was using the term shock in a manner curiously distant from its original significance of a sudden impact, the rest of the world was using the term shock most freely for a damaging blow, not merely to one's health or constitution, but to one's beliefs or moral situation. Congreve, for example, used this term shock in its moral sense as far back as 1694, and the idea of using the term shock for a syncope, a collapse, a concealed hemorrhage, or the effects of internal complications in sepsis, would have been quite blind to the ordinary man, since the term shock had been robbed of its suddenness by the surgeons, who had transferred a good term for cause into a somewhat poor term for an effect.

I linger over these nomenclatural matters, not merely because I like to do so, but also because the two horns of the dilemma, mechanical and moral, commotional and emotional, physical and psychical, traumatic and, as it were, merely "seismic," get well into the mind by a discussion. We see clearly that it is no superficial division of facts that we are making when we deal with Shell-shock.

At all events, you must be convinced that there is a perfectly legitimate use for the term shock for a condition which is either mechanical or moral, and sometimes both in its origin and in its effect. It is perfectly right for us to bear in mind the figure of shock as we find it in the cavalry pictures of Bourguignon (1621-1676), in the Louvre, or in the more accurate detailed pictures of Wouverman (1619-1668), as we see them both in the Louvre and in Dresden. Such pictures of the military assaults were very frequent in the seventeenth and eighteenth centuries. We hope for their historical intrest that they shall not all be moved from the Louvre to Dresden and Berlin as a result of the war.

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[*] It is to be observed that there is motion in each of these terms, "commotion" and "emotion," and it was, to me, a curious observation when I was trying to follow out their early usages, that the Romans apparently used the terms somewhat in the reverse manner, regarding *animi commotio* or *permotio* as very nearly something which we would have to translate by the term emotion.

[†] As in the following sentence, which I also gather from Murray from Astruc on Fevers, 1746. "The corresponding parts of the medullary substance are so shocked that the animal spirits are more vigorously protruded into the nerves." And even before that date (in 1733) Belloste speaks of mercury as producing its effects by "its shocking and disengaging the fibres."

[*] The idea was of shock as a sudden debilitating effect produced by an over stimulation of the nerves, by intense pain or by violent emotion, and, by simple transfer, the term "shock" was then given to a condition presumed to be one of nervous exhaustion resulting from such over-stimulation, pain or emotion; but all this is very far from the fine physiological, physical and chemical ideas concerning surgical shock which are now at our command, and the term shock passed out of the medical mind as having to do with anything except surgical shock until the renaissance of the slang term *Shell-shock* of this war.

Then we see the shock idea in its mechanical or electrical form being subtly studied in a variety of formulae which have never quite resolved the problem of the three bodies, and perhaps never will resolve it. We fix our minds upon the molecular profundities of the world, and wonder with Charles S. Peirce how we can transform the movements of the molecules of solids from their orbital paths into the paths that molecules of liquids move in, namely, curves, or into the rectilinear paths affected by the gases.[21] We perceive that the phenomenon of shock is, after all, one of the last problems to be solved by man. But throughout this development of the shock idea, the common man has used the term in a pretty obvious moral and physiological sense, and he, the common man, feels constantly not only the idea of shock as somehow conveyed from without, but somehow also setting up uncomfortable vibrations inside of his mind and of his body. Plato himself speaks of quakes of the body, using the self-same term, *σειςμός*, which is used of earthquakes.

I have thus somewhat lamely and superficially tried to sound the depths out of which the effectiveness of the term *Shell-shock* is born. It is not merely its alliterativeness and disyllabic punch, but it is that these terms both serve as containers for contained. Both shell and shock refer not merely to their outward physical figures, but also to their inward, functional, nay, psychical meaning, and incidentally the terms bring out for us today something of the ultimate physiological and psychological questions which confront the analyst of these conditions, whether you term them picturesquely *Shell-shock*, or more exactly, *war neurosis*.

Civilization, Justice Holmes has somewhere said, consists in the maintenance of complexity. Never has the human cerebrum (the highest aim, as Sherrington has said, of science) yet been subject to such enormously disproportionate assaults as in this war. The profound sexual cataclysms which have been thought by some to underlie the hysterical behavior of the weaker sex, have here been equalled *ab extra*. It is conceivably much easier in the weaker sex, proceeding from interior lines of the sex glands and in other internal ways, to produce such curious blottings-out of function as we see in hysteria, than it could ever be to produce in the more solid and immobile male the same effects either from within or from without.*

Let us leave the term Shell-shock, then, with one more observation, namely that the term appears to be *a perfect term for the ordinary man*, as it means much and little, connotes enormously and denotes a minimum, and casts the hearer forthwith back upon the expert. When the ardent social worker hears the term *dementia precox*, she feels herself almost entitled to believe that the patient in question is demented, or is going to become demented. A similar inaccuracy lurks about the term *precox*. For that reason, sometime I intend to write a paper entitled "*Non-dementia, Non-precox*," to contend with a notion which I regard as positively dangerous to the fate of certain persons given that diagnosis. But confronted by the term *Shell-shock*, the ardent social worker or the ordinary man fails to get any incorrect notion about the nature, and especially about the prognosis, of the condition. If there is any suggestion of prognosis, it is the correct suggestion of curability possibly conveyed by the suddenness implied in the term shock; but I defy the ordinary man to get from the ordinary term Shell-shock very much that denotes anything in particular. All he gets is an enormous connotation. This connotation may run back for the race into tree stumps, savages brandishing spears, palatial decorations, the protrusion of animal spirits, the Leyden jar (sometimes familiarly known as the "shock bottle"), and the aspen shaking of the man in fear or its interior equivalent. But whether the slang runs back so far or no, and whether the shell is a shell of powder or a shell of fear, and whether the shock is of solid particles or in a moral sense, the problem is implicitly laid down in the slang.

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* Whether the molecules of the male proceed in more definite orbits or quasi-orbits than do those of the female; whether in the female these molecular movements run in more curvilinear ways, may not ever be known. As to the properties of protoplasm, or of what he terms *life-slimes*, let me quote from Mr. Charles S. Peirce[22] as follows: "It is true that an opinion has been emitted and defended among biologists, that there is but one kind of protoplasm; but the observations of biologists themselves have almost exploded that hypothesis, which from a chemical standpoint appears utterly incredible. The anticipation of the chemist would decidedly be that enough different chemical substances having protoplasmic characters might be formed to account, not only for the differences between nerve-slime and muscle-slime, between whale-slime and lion-slime, but also for those minuter pervasive variations which characterize different breeds and single individuals." Whether males and females sufficiently differ in their respective slimes to account for all the different features of our social environment, I would not say; but it is the province of the present war to prove that their nerve-slimes, as Peirce would say, are subject to the same kinds of liquefaction tracks. At all events, hysteria in the male is no longer a *curiosum*.

In surrounding the neuropsychiatric problem, we shall not, however, be able to get on with symbols; we should do far better, no doubt, with cases. Even these, today, I am not able to give you in detail. Their collection and arrangement has proved that surrounding the Shell-shock problem means surrounding the problem of neuropsychiatry; means conceding that a particular so-called Shell-shocker might even very possibly be something quite apart from the field even of the functional neuroses, and sometimes quite far apart even from the organic neuroses and psychoses.

At this point, I can probably do no better than proceed with a consideration of the relations between so-called shell shock and the major groups or orders of mental disease. Those of you who have attended clinics at the Psychopathic Hospital recently, or have had time to dip into sundry writings of our staff, will be familiar with the new ordering of old entities which we have adopted for the practical purposes of diagnosis. We have not propounded a new classification of mental diseases, for indeed, luckily, that is not necessary, such is the unanimity[*] of the psychiatric world at the present day over the majority of the major groups.[23] I shall enumerate these. We think of mental diseases as I, syphilitic; II, hypophrenic (that is, feeble-minded in some of its phases, including even slight degrees of subnormality not entitled to be called feeble-minded in the ordinary sense); III, epileptic; IV, alcoholic (or due perhaps to some drug or poison); V, encephalopathic (in the sense of some focal brain disease); VI, symptomatic (in the sense of some somatic disease); VII, senile (or presenile). The seven groups so far enumerated, I believe the general profession is pretty well equipped to consider, at least roughly to diagnosticate and to handle with due respect to the interests of the patient and of the community. I am bound to say that some of my colleagues would not go so far as to the competence of physicians in general in these fields, and one is aware that a plenty of mistakes have occurred even in these groups through the bad judgment of practitioners. Nevertheless, I hold to the conception that our profession is reasonably well equipped to handle these greater groups, having in mind all the while the appropriate temporary calling-in of the specialist. But there are two more groups, in addition to these seven, in which I am not so sure that the general profession knows as much as it should. I refer to VIII, the schizophrenic group, commonly known as the dementia precox group; and IX, the cyclothymic group, sometimes termed the manic-depressive group. It is the victims of the diseases that constitute these latter groups that ought unconditionally to be excluded with few exceptions from the army; and it is the study of these conditions which ought to be carried out as a part of every man's post-graduate training, not merely for his work on draft boards, but for his work in civilian practice. There is another group of, X, psychoneuroses with which the profession regards itself as familiar, and with which it doubtless is familiar, in what might be called *blooming examples* of hysteria, neurasthenia, and psychasthenia. But the nub of the situation lies in the fact that the diagnosis of instances which are not such blooming examples is difficult, and hence it was that I qualified my statement as to the competence of the practitioner in this tenth group. It is, of course, the tenth group, of psychoneuroses, into which the majority of the Shell-shock cases fall.

Now a study of the literature of the belligerents having Shell-shock in mind as its special topic and aim proves to require a study of war literature in all of these groups. There are cases of so-called Shell-shock which even well-prepared medical men have placed in the neurosis group, when they should have been placed in one or other of the groups mentioned.

I shall now consider in turn some relations of shell shock to the several groups above mentioned.

SHELL-SHOCK AND SYPHILIS.

If the tempo of this war permitted, the race might turn a great trick. For one of the ways to surround the spirochete is to learn his every habit and plan of multiplying life. Aside from shell shock in its traumatic sense, the syphilis records of this war[24] will, properly utilized, for years to come define the term of infection and set up milestones for tracing the post-infective history and at last the complete natural history of syphilis itself and, in particular, of the most intriguing of all spirochete problems, that of neurosyphilis. As I have elsewhere said, hardly a more important problem faces the race than this problem of syphilis, and not the least of the sub-questions here is that of neurosyphilis.[22] But the solution of neurosyphilis problems, such as the incidence problem (to be solved by the post-bellum utilization of the army and navy records), will be vastly aided by Shell-shock. The Shell-shock records will contribute perhaps a little to the incidence problem of neurosyphilis, but enormously more to the problems of its course in time and of its spinal and cerebral placement. When the governmental and state authorities begin to note, a decade after the war, the to them unexpected augmentation in the number of tabetics and paretics, there will be ample time to search our military records,* to define and describe the curve of post-infective history followed by syphilis of the nervous system. But today we cannot honestly say we see the end of this war or the beginning of an armistice. All we can do is to pluck a brand from the burning. Now that brand from the burning syphilis question is precisely the Shell-shock variety of traumatic neurosyphilis. Little increments of knowledge have been trickling over from one civilian branch of medical *tychastics,* viz., the growing science of industrial accidents; and the exact natural history of, say, traumatic paresis is being laid down by the eager sparring efforts of experts testifying before industrial accident boards. Before the war, I had long been of the opinion, on the basis of the Boston Psychopathic Hospital's work for the Massachusetts Industrial Accident Board, that firms might well investigate the blood sera of those employees engaged in dangerous work, to the end that special insurance devices be adopted for syphilis-positives. By chance, I have here mentioned the employers first; but who can doubt that the community in general and the employees in particular would or should be grateful for the knowledge of the syphilis in their midst? Nor can I think of a more subtly effective educative measure than the general application of this preventive diagnostic device: who but must inquire into the reason and necessity of the measure and cut his jib thereby? Now the trickling stream of knowledge from industrial tychastics might readily swell into a considerable river of facts from the accident-lore of the war, if only, by the grudging permission of the Kaiser, there were time to do proper justice to the tychastics of the war. Trauma or no trauma, cerebral concussion or psychic shock, let all our workers study and record in this war the antecedents, prodromes, course, remissions, exacerbations, curability, signs, symptoms, and conditions of the neurosyphilis of the war, particularly the Shell-shock variety. In that manner shall we spy out the chemical and physical ways, somatic and cerebrospinal, of syphilis—and in the process of stoning the Hohenzollern serpent scotch that other and more terrible autocrat of man, the spirochete. For while the Hohenzollerns must pass, it is not so sure about syphilis. We need another Cato the Elder to cry always, *Delenda est spirochaeta!* Down with syphilis!

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[*] That I assert such unanimity may astonish you, but I believe even the non-specialistic practitioner is decently familiar with the outlines of 80% of our psychiatric problems—at all events, with eight out of ten of the major groups we have placed in a certain order in our practical key. There is an eleventh, rag-bag group—the conditions which even the psychiatrist feels incompetent to deal with. These are a variety of psychopathias that, to be sure, appear somewhat even in the military service, but they do not bulk especially large in the problem of Shell-shock. Aside from this eleventh, rag-bag group of psychopathias, we deal, as above said, with some ten groups, seven of which are sufficiently familiar in their major outlines not only to the general practitioner, but to many specialists who are not psychiatric specialists.

SHELL-SHOCK AND HYPOPHRENIA (FEEBLEMINDEDNESS).

The possible relations of Shell-shock to feeblemindedness are of some interest. We know that "Shell-shock picks out certain nervous and mental weaklings and indeed that one author claims as high a percentage as 74 for war neuroses having a hereditary or acquired neuropathic basis. How far does feeble-mindedness itself count among these supposedly susceptible nervous and mental weaklings? Is a feeble-minded person especially a condition for Shell-shock?

There are rumors of experiments to show that if in an aquarium containing some jelly fish alongside bony fishes, you explode a substance, the jelly fish ride through unscathed whereas the bony fishes are killed by the shock. The jelly fish presumably have too simple an organization to permit them to be killed by the shock of the explosion.

There is something to be said for the idea that in man also the higher and more complex specimens are more susceptible to Shell-shock, that is, to the neuroses of war, than are the lower and more simple combatants. Some statistics indicate that officers, who are in the main of a higher and more complex organization than the private soldiers, are much more susceptible than are private soldiers to the neuroses of war. Doubtless we shall not be able to verify these statistics until long after the war and, so far as I know, no very inclusive statistics have been presented.

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* If, perchance, some bureaucratic obscurantist shall not have caused their destruction or—just as maleficently—their nonaccessibility, through niggardly appropriations for research!

On the whole, I judge from the case history literature[27] that the feeble-minded, unless they be of that very high level sometimes called subnormal, are not particularly susceptible to the neuroses. It is obvious that idiots and for the most part, imbeciles, do not get into military service. As for what the English term the feeble-minded or what we in America are now terming morons, it may well be that our draft boards do not always exclude. High French authorities have specifically determined in certain instances that the high-grade feeble-minded would be perfectly suitable for certain branches of the service. There is the case, for example, of a sandwich man of Paris who somehow got into the French army and was being perpetually sent to look for the squad's umbrella and the key to the drill ground, but sang and swung his gun with joy as he went to the front, and apparently did very well there. This man had been a state ward and, as you know, well-trained state wards are frequently exceedingly good at elementary forms of drill.

Then there is another case of an obvious imbecile who was quite without any idea of military rank and often got punished for treating his superiors like his comrades and was the butt of his section, but on the firing-line remained cool, careless of danger—a magnificent example to his comrades—at last surrounded and taken prisoner. Here the story might have ended and the folly of enlisting imbeciles in the army might have seemed perfectly plain, except that our imbecile forthwith escaped from the Germans, swam the Meuse and got back to his regiment!

Here then are cases in which the slight degree of hypophrenia—it seems unwise to give it the opprobrious title "feeble-mindedness"—would have been entirely inconsistent with the development of Shell-shock. Such men are, perhaps, too simple to develop neuroses. On the other hand, it would appear that certain of the slight degrees of hypophrenia, such as we might find in so-called subnormal or stupid persons, would prove capable of "catching Shell-shock" as it were, and then find themselves entirely incapable of rationalizing the situation. In short, there may be a group of psychic weaklings, just complex enough to fall into the zone of potential neurotics, but just simple enough to render the processes of rationalization (or what one author terms *autognosis*) and of psychotherapy in general entirely unavailing.

After the war we may be confronted with a number of persons with their edges dulled by the war experiences. One has met even brave officers who, after months of furlough, still maintain that they will never get back to their normal will and initiative. Whether these hypoboulic persons have not been reduced to subnormality so as to resemble the slighter degrees of hypophrenia or feeble-mindedness can hardly be determined now. They will form important problems in mental reconstruction, for with the best will in the world, the occupation-therapeutist with all her technic, may be unable to force or coax the will of such hypoboulics into proper action. Nor will the ordinary environment of home and neighborhood turn the trick properly. Expert social work in adjustment, both of the returned soldier to his environment and of the environment to the returned soldier, may be necessary. I speak of this problem here not because these persons are hypophrenic or feeble-minded in the ordinary sense, but we must constantly bear in mind our experience in the teaching of hypophrenics (both in the schools for the feeble-minded and in the community) when we are facing problems of mental reconstruction.

Aside, too, from the mental edges dulled by war, we must think of persons who have been thrown into a state of what might be termed voluntary feeble-mindedness. A friend of mine has recently suggested that many Americans are in a state of what he termed voluntary feeble-mindedness, never doing quite what was expected of them or quite what they could readily do. The observations upon which my friend based the suggestion were made, not here in Boston, but in the midst of New York, where psychic parasitism is possibly more frequent than with us here! However that may be, it will be important for us after the war to distinguish between the potentialities of the subnormals who have gone through the war with character not specially changed, the men who have been rendered somewhat inferior by their war experience, and the men who are in some sense voluntarily inadequate. Workers in sanitaria for tuberculosis have long assured us that their cured cases are sometimes hard to refit into the work of the community on account of the mental and bodily habits which their sanitarium life has dropped them into. Well, I am afraid that routine military life, aside from its occasional dramatic and heroic episodes, gives one a certain tendency, if not to somatic laziness, then in any event to psychic sloth. Let us therefore bear these principles in mind in our reconstruction efforts, taking as many leaves out of the book of hypophrenia as may be. Doubtless, we shall not have many cases of Shell-shock in the out-and-out sense of hysteria and complex neurasthenia in the feeble-minded of our army, but we must still look for odd reactions on their part, and we must not look for too great skill in the process of *γνῶθι σεαυτόν* in these persons whose powers of self-analysis and of autocritique, which are at the outset limited.

SHELL-SHOCK AND EPILEPSY.

The authorities have been somewhat surprised by the number of epileptics which have gotten by the draft boards. The statistics are not yet ripe, but certainly the enlistment of an epileptic is not a rarity. There are some singular instances in the war literature showing how hard it sometimes is to bring out epilepsy. There is the English case, for example, of a man, an epileptic's son, who had himself been epileptic from 11-18, who entered the Expeditionary Force at the outbreak of hostilities, went through the retreat from Mons and through two years of active warfare without having a single epileptic convulsion. In fact, in September, 1916, he was put in charge of eight men on guard duty. Apparently the new responsibilities worried him, and two months later he had become epileptic to the extent of petit mal.

Another man who had never been epileptic (though his sisters had been) was wounded four times, was never worried by shell fire, got somewhat depressed after the death of his father and five brothers in the service, but did not become epileptic until finally he was blown up and buried three times in one day, and it was a whole month later when he became epileptic, although treatment by rest and bromides apparently resolved the affair.

Other cases seem to show that war experiences can bring out epilepsy, although in most instances it would appear that there was an epileptic or otherwise neuropathic heredity in these cases.

There is one author, Ballard,[28] who has actually propounded a theory of Shell-shock as epileptic, pointing out the occurrence of epilepsy long after the early symptoms of Shell-shock have disappeared.[*] There does not appear to have been any increase in epileptics as the result of the war, either from the standpoint of Shell-shock or from the standpoint of brain injury, so far as the records of the National Hospital for the Paralyzed and Epileptic in London are able to show.

As in all other instances of mental or nervous disease, when an epileptic returns from the war, whether or no he was potentially or actually an epileptic before the war, his relatives are bound to term him a case of Shell-shock. I am familiar with a case in a hospital in a certain Atlantic port, a case of pronounced and obvious epilepsy. In the wards he is treated as the hero of every occasion. Not only the nurses and attendants, but the other patients and often the physicians can hardly resist thinking of him as somehow a case of Shell-shock. It is a comment upon the status of mental hygiene in general that this selfsame epileptic, had there been no war, would have been, as it were, a common or garden epileptic, mute and inglorious on some sunny hillside.

In passing I may note how many instances in the medico-legal part of the war literature there are of epileptics who come up for courtmartial or for medical examination pending courtmartial. We may suspect that many a case of epileptic fugue has been regarded as a case of desertion. There is the case of an epileptic who left camp one morning and got drunk. Investigation showed that he left camp before anything epileptoid had happened. He developed in his drunkenness a pretty clearly epileptic crisis with great violence, for which he had a complete loss of memory. The French Council condemned him to five years of labor, not admitting in this instance that responsibility was diminished by reason of the man's being epileptic. In short, from the military point of view, he should, so to say, have known enough not to have gotten drunk, and so have avoided getting his epileptic crisis. Of course the decision was here very close, and a like decision would not always be rendered. To add to the complication of this particular case, the very first epileptoid crisis which caused it to be known that the man fell into the epileptic group was due to Shell-shock, or at least developed immediately after the bursting of a shell nearby. On the whole, however, the relation between epilepsy and Shell-shock is not a close one.

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[*] In one instance, fugue and other minor symptoms were later replaced by epilepsy; in another, an epileptic confusion developed eight months after an explosion and in a third, a case of mine-explosion, stammering resolved into mutism and mutism finally to epilepsy. Of course there is a so-called general resemblance among all forms of hyperkinesis or irritative discharge of the nervous system. If we term epileptic all the things that various authors have termed epileptoid, we may be doing nothing more than to say that we believe these cases all subject to epileptic hyperkinesis. In that direction, of course, it has long been said that dipsomania was really a form of epilepsy. Whether Shell-shock is ordinarily subject to recurrence in such wise as to imitate the recurrence of attacks of dipsomania, of manic depressive psychosis or of epilepsy, is, to say the least, doubtful at this time.

SHELL-SHOCK AND ALCOHOLISM.

A good deal of prime interest surrounding alcoholism has been developed in the war; but on the whole, so far as I can determine from the war case literature, there is little or no direct relation between alcoholism and Shell-shock, despite the fact that in a number of instances alcohol has complicated the issue and very possibly helped in a general demoralization of the victim. However, the alcoholic amnesias and particularly a few instances of the so-called pathological intoxication have exhibited a certain medico-legal interest, recalling what was just said above about the responsibility of a drunken epileptic. Alcohol remains, I should say, pending exact monographic work upon this topic, purely a contributory factor for the war neuroses.

SHELL-SHOCK AND FOCAL BRAIN DISEASE.

In the orderly diagnosis of mental disease, from the standpoint of the major orders or groups, we ordinarily come at this point to the focal brain diseases. In analyzing the neuropsychiatric problem of a so-called Shell-shocker, it is, of course, our bounden duty to exclude syphilis. Even though the percentage of syphilitic victims of Shell-shock is not high, yet these cases promise so much from treatment that they deserve to get their diagnosis as early as possible, and the English workers who have worked most in the syphilitic field insist upon this point.

We next proceed, as above indicated, to the elimination of hypophrenia with all the various grades of feeble-mindedness. Thirdly, we try to exclude the various forms of epilepsy; and fourthly, the effects of alcohol, drugs and poisons.

In ordinary civilian practice, such as that at the Psychopathic Hospital, the orderly elimination for diagnostic purposes of the great groups of the syphilitic, hypophrenic (feeble-minded), epileptic and alcoholic, leaves us with cases in which there either is or is not important evidence of organic nervous-system disease, such as that shown in cases with heightened intracranial pressure or in cases with asymmetry of reflexes and other forms of parareflexia. In military practice these logical questions of prior elimination of syphilis, feeble-mindedness, epilepsy, and alcoholism must go a-glimmering at first, unless their signs are so obvious as to permit diagnosis by inspection. But the nervous and mental cases almost one and all give rise to *the suspicion* at least *of organic disease*, possibly traumatic in origin. Even when a man falls to the ground without a scratch upon his skin, there is some question whether in his fall he has not sustained some slight intracranial hemorrhage which the lumbar puncture fluid might show. Add to this that the signs of hysteria are very often unilateral, and it will readily be conceived how much like an organic case an hysteric in the casualty clearing station may look. Rapid decision may be necessary in order to get immediate effects in psychotherapy a few minutes or hours after the shell explosion, and one may need to choose between applying a possibly unsuccessful psychotherapy forthwith and making a thorough neurological examination. As Babinski has pointout, making a thorough neurological examination gives opportunity for all sorts of medical suggestion to be conveyed to the patient. It would appear that many an hysterical anesthesia has been given to a patient by the very suggestion of the physician testing sensation. Here one does not refer to malingering in the conscious and designed sense of the term, but to the operation of the genuinely psychopathic, that is to say, hysterical processes.

In the case of head injury, naturally the majority of nerve phenomena will ordinarily be upon the opposite side of the body to the side of the head that is injured. The reverse situation holds for hysterical cases, wherein it would appear that the bursting of a shell, let us say upon the left side of the body, seems to determine contractures, paralyses and anesthesias to that same left side of the body; now and then complicated cases appear which put the neurologist through his best paces. Such a case is that of a man who was wounded on the left side of the head and promptly developed a *hemiplegia* on the same (*left*) side, *with aphasia.* Now aphasia ought to be the result of a lesion on the left side of the brain in the common run of cases, whereas left-sided hemiplegia ought to be the result of lesion on the right side of the brain. In point of fact, the analyst of this case felt that he was dealing with a direct injury on the left side of the brain, leading to aphasia, and a lesion by *contrecoup* on the right side of the brain, leading to a left-sided hemiplegia.

It is not only at the casualty clearing stations and along the lines of communication that the difficulties in telling Shell-shock in the neurotic sense from traumatic psychosis and the effects of focal brain lesions is found, since the literature amply shows that diagnostic problems remain open for weeks or months in the various institutions of the interior, to which all the belligerents have been forced to send their cases.

A glance at the differential tables that have been developed, for example, by the French neurologists, will show how fine the diagnosis betwixt a hysterical and an organic disease may be, especially when we consider how often there are admixtures of the two. The rule holds for the vast majority of cases that absolute bullet wounds or shrapnel wounds do not produce Shell-shock; and the statistical story is so clear that one might almost think of the wounds as in some sense protective against shock, that is, against Shell-shock, not against traumatic or surgical shock. Nevertheless, by some process whose nature is obscure, the hysteric is apt to pick up some slight wound and, as it were, surround this wound with hysterical anesthesia, hyperesthesia, paralysis or contractures.

The chances are, if we should collect all our civilian cases of railway spine and of industrial accident with traumatic neuroses, we should be able to prove this same strange relation between slight wound in a particular part of the body and the local determination of hysterical symptoms to that region. Of course, the determination follows no known laws of nerve distribution to skin or muscles, and the effect is apparently a psychopathic or, at all events, a dynamic process without clear relations to the accepted landmarks.

I do not mean to suggest, aside from the hurry of war, that the differential diagnoses here are more difficult than those in civilian practice, but the difficulties are at least as great as those that have faced the civilian practitioner. What needs emphasis is that just because we have concluded that the statistical majority of the cases of so-called Shell-shock belongs in the division of the neuroses, we should *not feel* too *cock-sure that* a given case of *alleged Shell-shock* appearing in the war zone or behind it *is necessarily* a case of *neurosis.*

After the early "period of election" for psychotherapy in the war zone has passed, there can be no excuse except general war conditions for not according to every case of alleged Shell-shock a complete neuropsychiatric examination, having due regard to the ideas of Babinski concerning medical suggestion of new increments and appendices to the original hysteria, developed in battle or shortly thereafter.

I have, however, been able to find in the literature good instances of puzzling diagnoses in which such conditions are in evidence as acute meningitis of various forms, hydrophobia, tetanus, and the like.

Especially in the diagnosis against Shell-shock hysterias we may need to think of the abnormal forms of tetanus, to which an entire book in the *Collection Horizon* has been devoted. The differential diagnostic tables here draw up distinctions between local tetanus, involving, let us say, the contracture of one arm, as against a hysterical monoplegia.

SHELL-SHOCK AND BODILY DISEASE.

In civilian psychopathic hospital practice, if a case is not syphilitic, not feeble-minded, not epileptic, not alcoholic, and without signs of intracranial pressure or disorder of reflexes, then we as specialists must consider whether the disease in question is not due to some form of bodily disorder outside the nervous system; for example, we think in practice of infectious psychoses, of exhaustive states such as the puerperium, of toxic states such as may be found in cardiorenal cases, and of glandular phenomena such as we are familiar with in the thyroid disorders.

Under the war conditions, it might be thought that these somatic disorders yielding the so-called symptomatic mental diseases would be frequently found.

Aside from these rarities in puzzling diagnosis, we find more commonly in the literature evidence that the soldier's heart, the so-called "D.A.H.," or disordered action of the heart, of the English army reports. This soldier's heart is sometimes associated with hyperthyroidism, and sometimes hyperthyroidism is found alone, with symptoms suggesting those of a sort of diffuse Shell-shock.

One author claims rapid cures of hyperthyroidism by the relatively simple process of hypnosis. Perhaps this is not too unlikely in view of the still obscure relations between mind and hormones. A little more surprising, perhaps, is the assertion met with that psoriasis is sometimes a Shell-shock phenomenon.

The literature clearly shows, however, that, as in most special problems, the internist is still in demand. I will recall to you again how one internist was misled on the stand into stating that he was a "general specialist." This is what we would all need to be, were we to solve the problems of Shell-shock in the time allotted to us by the war.

SHELL-SHOCK AND OLD AGE.

For completeness' sake, I mention here the old-age diseases which the specialist in psychiatry has to consider after he has eliminated the diseases of brain and body, that the neurologist and internist cover.

The relation of old age to Shell-shock is just now a distant one. Are the Shell-shockers, especially the mild instances of men coming back with their so-called "nerves," with their dulled emotional edge or their equally abnormal over-sensitivity, ever going to get over these states and pass into normal activities once more? Are their lives to be shortened through their experiences? We who see the Grand Army veterans parading are apt to comment on their fine figures and the immense powers of resistance they must have shown. They were in a sense picked men both in war time and since that time. What now shall be said concerning the more serious experiences of the present war? Are we producing a group of potential neurotics, liable to be thrown into hysteria, neurasthenia, or psychasthenia by the accidents and adventures of post-bellum life, or are these men ever to get back to so normal a terrace that they can be regarded as even potential neurotics? Will they not all of them lose what the physicist calls positional energy, and remain a terrace lower, neuropotentially speaking, than normal men?

I get the impression from some returned soldiers that they believe themselves forever somewhat broken men, but I am inclined to think that the psychology and physiology of their convalescence have not been sufficiently worked out to allow us to agree with them forthwith. For the present we should concede to Nature her *vim medicatricem* and consider that in a period of not over two years after the war experience is over these men should get back to their normal emotionality and their normal equipment of will and character. But I am bound to say that this conclusion depends more upon hope than upon proofs, and at best hangs upon the suggestions from convalescents that we obtained in the acute diseases of civilian life, which very possibly bear no sort of relation to the war effects. What these war effects in general really are is doubtful. There seems to be no particular augmentation in cases of mental diseases of the physical exhaustion type.

We are as a rule able, it would appear, to assign the exhaustive psychoses that do occasionally appear, to other and more specific causes than the fatigue and strain of the war. Now and then a case is reported as prematurely old-looking; but on the whole there is no special evidence that life is to be, in general, shortened, or in later years made at all more difficult by the war experience unless there has been some specific disorder leading to incapacity in the war.

SHELL-SHOCK AND SCHIZOPHRENIA (DEMENTIA PRECOX).

That the causes of dementia precox, still unknown as they are, lodge more in the interior of the body or in special individual reactions of the victim's mind, seems to be shown by the phenomena of this war, since there seems to be no great number of dementia precox cases therein produced. To be sure, some schizophrenic subjects do get into the service, and sometimes their delusions and hallucinations get their content and coloring from the war. Thus a Russian, wounded in the army, developed delusions concerning currents running from his arm to the German lines and felt that he was, so to say, the Jonah of the Russian front, as he could determine shell fire to the spot where he was through the unfortunate currents from his arm.

Now and then a case shows a scientifically beautiful admixture of ordinary dementia precox phenomena with the effects of shell wound or shock. A picturesque case from the standpoint of German psychiatric diagnosis is one of a soldier who boxed the ear of a kindly Sister who tried to steer him from a room where the examination of another patient, a woman, was going on. On the whole, the eminent German psychiatrist who examined the case felt that he was really one of psychopathic constitution, as he had shown somewhat similar irascibility on a slight occasion before. However, much to the astonishment of all, the patient developed further symptoms. His ego got terribly swollen. At last he was fain to utter a denunciation of the entire *Junkertum* and of the Kaiser: he said in fact that he was an Inhabitant of the World and not of Prussia merely. Over here we allow such persons to edit newspapers and write books with impunity, but the eminent German psychiatrist, before mentioned, was constrained to alter his diagnosis of this cosmopolite from psychopathic constitution to dementia precox!

SHELL-SHOCK AND CYCLOTHYMIA.

On account of the somewhat close resemblance between the phenomenon of manic-depressive psychosis and what we ordinarily feel ourselves—a logical situation reflecting merely the fact that the phenomena of over activity (mania) and of under-activity (depression) are merely quantitative variations from the normal—it might be supposed that the war life and its shock and strain would start up the cyclothymias in some numbers. Why should not a shell explosion start up a mania or throw a man into a depression? In point of fact the literature somehow does not agree with this presupposition.

Some years ago in Massachusetts a brief investigation was made of the assigned causes of the successive attacks in a great number of cyclothymic (manic-depressive) cases, and it was found that each successive attack progressively had less of the physical in the previous history. Something like 45% of all the first attacks had a pretty obvious cause in the soma, such as a kidney disease, a heart disease, a puerperal condition and the like, but the second attacks failed to show even 20% of such obvious somatic causes, and the third attacks even less than 10%, and so on.

Now war conditions and even the shell explosions themselves have apparently not set up any such conditions as those of mania or of depression. Most of the instances of cyclothymia are instances of men who are cyclothymic before they enter the army. These experiences, when after the war we can sift them all out, may allow us to form better ideas as to the etiology of many of the psychoses, and the great war may thus prove a gigantic experimental reagent which will aid in solving some of the major problems of mental hygiene.

I have pictured the practical situation in which the neuroses of the war find themselves—a situation bristling with diagnostic difficulties. The great proposition deducible therefrom is,

The diagnostic problem in Shell-shock is the diagnostic problem of neuropsychiatry at large.

The neuroses of war have this in common with the neuroses of peace—that they need to be distinguished from all other nervous and mental diseases. One cannot be a specialist in Shell-shock unless one is a neuropsychiatric specialist; even the neuropsychiatrist has much to learn from the internist, the orthopedist, the neurosurgeon, as well as from the psychologist.

But, however wide the diagnostic field for Shell-shock, the therapeutic field is wider still. For the neuropsychiatric reconstructionist has to face the peculiarities of the military status of his ward, the difficulties of demobilization into civilian life (a canal system with very precise technic for the opening and closing of locks), the choice and timing of the proper measures of bedside occupation, of occupation therapy in a broader sense, of prevocational and vocational training—the whole complicated by the character changes that may have set in to bowl over all one's preconceptions. The nub of the matter, after the era of the *manière forte,* the brusque psychotherapy, the rough jarring of the man back into approximate normality is, perhaps, this possibility of subtle character changes defying possibly anybody's analysis, but stimulating us all to our best endeavor, whether we are physicians, psychologists, occupation-workers, social workers, or nurses. Now that all sorts of reconstruction programs are in the air, each claiming its share, or more than its share, of attention, let us not forget that no one can stake out in any small plot the measures of refitting, readjustment, readaptation, rehabilitation—all these terms with slightly differing denotation have been used—especially when we take into account that not only must the patient be refitted to his entourage, but also not seldom the entourage to its returned Shell-shocker.

It is proper to place these general considerations first because the slow, patient, prosaic measures of reëducation are apt to be forgotten in our enthusiasm for the lightning-like cures of the hypnotic, the psycho-electric, the pseudo-operative, and other psychotherapeutic forms. Psychotherapy in all its forms has come into its own in Shell-shock. Miracles or their equivalents are daily wrought by men who are not prophets. Lourdes and Christian Science have their unassuming rivals. Let us remember, however, that even Lourdes and Christian Science never solved 100% of the problems placed before them, even though the votaries have the best will in the world to be cured. If the will itself is disordered, what can be done save investigate? And the *mauvaise volonté* is by no means absent from some of our prospective patients; witness one man, a Frenchman, who so resented being cured by *torpillage, i.e.,* by the electric brush, that he carried his case against Clovis Vincent, who cured him of his hysteria, clear to the Academy! And, even after we have cured our cases by these modern miracles, let us not be too proud of ourselves! One soldier sent back to Australia, hysterically mute for months, got his voice back after killing a snake,—a peculiar instance of occupation-therapy, not enumerated in courses on reconstruction. And remember the man who jumped the wall and got drunk, breaking back into the hospital to show his doctor how his refractory voice had at last come back. Thus there are cures and cures (even a newspaper cure of mutism by a moving picture vision of the antics of Charlie Chaplin), and spontaneous non-medical cures as well as medical ones, and slow cures due to *vis medicatrix,* as well as to shrewd reëducation measures.

Taken by and large, what problem has more threads to more sciences and arts than has Shell-shock? The very name itself has within it a good deal of the essence of mob-psychology: in another age we should have had the same mob fear of it that now invests such things as insanity, syphilis, cancer, leprosy. But a speedy application of the principles of neurological art, the legacy of Charcot, has nipped that articular mob fear in the bud. Yet the magic of the slang term itself, with all its imbedded pomp and circumstance of the war, making Shell-shock a veritable microcosm of the great war, symbolically speaking, has us all under its spell, whether layman, physicians, or philosophers. Does one sometimes die of Shell-shock, just because the cells of the vago-accessorius nucleus lose a little of their substance, as Mott relates? Very well, where does this carry one except into the deepest recesses of physical chemistry, into what Peirce, years ago, particularly termed the liquefaction of the life-slime or protoplasm? At this point the structural fades into the functional, or the functional into the structural, it matters not which. Take Shell-shock from the farthest outside, as mob-psychology, or from the farthest inside, as a problem of kinetic energy, there is little but maximal interest anywhere. I had the curiosity to draw up a list of the specialistic types of worker whom I personally knew to be engrossed in some aspect of this problem; there were no less than twenty-five. I forbear to list them here.

Where does this problem systematically belong? Medicine claims it by a certain right of priority in its diagnosis and a good share in its successful treatment. But in another sense medicine has but a slender claim to the wealth of its content. Babinski by means of it seems to have split the dynamic into two parts. As to the high psychic functions, we had thought of them as split in hysteria, in dissociation of personality. And we had roughly distinguished these conditions as *psychopathic* from conditions we called *neuropathic,* regarding the latter neuropathic disorders as on the model of the effects of cutting off or destroying certain necessary neurons. However clear or unclear we were as to the nature of the neuropathic, it does not here matter. Babinski's point is that there is another kind of dynamic disease that operates, not after the manner of hysteria, but after a manner reminding one of the forgotten "reflex" disorders of Charcot—disorders that fitted the textbooks so poorly that the textbooks dropped them out. In short, what you might call *the dynamopathic or functional in nervous disease has been shown to fall into two parts*—a *psychopathic* fraction and a non-psychopathic fraction. Babinski calls this non-psychopathic fraction *physiopathic* or reflex. And these reflex or physiopathic disorders have a different order of curability than have the hysterical or psychopathic disorders. By what simple device did Babinski prove this? By chloroforming the patient. Under chloroform, when all the other reflexes were stilled, Babinski could bring out, in relief as it were, certain reflexes, or even hypertonuses, that were in the waking life wholly concealed,—yet at the same time consciousness, in the usual sense of that term, had vanished. Accordingly, the proof of a new type of functional disease, at times concealed by the overlay of higher neurones, was now plain. Does not this offer new leads of the greatest value in that most intricate of fields, psychopathology? Is not the model here offered of diseased *nervous functions, non-psychic* in nature (in the ordinary sense of psychic) *but of almost equally complex nature?* I confess that, to me at least, the world seemed potentially a great deal richer when this suggestion of the physiopathic—*i.e.,* non-psychopathic and non-neuropathic (in the sense of neuronic loss)—came across the Atlantic. Another little nick in that frozen block we have been trying so long to exorcise, viz., that indefinable Archeus, Incubus, or Succubus (words fail here), the so-called Unconscious!

Life and, for that matter, the world itself is, according to one account, nothing but a chapter of accidents. Of these, Shell-shock is not the least terrible. Thank Heaven—a little light on life and mind and their laws can be thrown by this fortuity, for which the Kaiser and his like be cursed into eternity,—unless they themselves are in some sense gigantic errors of an irresponsible fate. God help us to make it so that they and their ruins shall not be the last in the chapter.

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Original Articles.

ORGANIZATION IN HOSPITAL DIETETICS.

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DIETETICS in its broadest sense includes so much physiology, chemistry, and clinical medicine, as well as theoretical and practical cookery, that it is too big a subject for any one individual to cover.

The *medical* part of dietetics is as much a part of therapeutics as drug treatment, and can be administered only by the physician. There is, for example, no heart disease diet or nephritic diet that can be made out in the form of a list available for the layman, any more than there is a heart disease or a nephritic drug list that can be used in the same way. There are certain general principles of dietetic treatment in each disease, or, better, certain general principles of treatment, of which the dietetic treatment is an inseparable part; but with any individual patient the diet and the drugs given depend on the condition as a whole in that particular patient, and may change with change in the clinical condition. In heart disease, for example, the general rule is to restrict the diet more or less—just as we restrict muscular activity—in an endeavor to relieve the heart of excessive metabolic work. But in weak, undernourished, anemic patients with, perhaps, a subacute infection, quite different principles may prevail; and the occurrence of fermentation and other gastric and intestinal disturbances may call for a high degree of individualization in the diet from day to day. It is obvious that we cannot expect either the dietitian or the chemist to be responsible for the medical part of dietetics any more than we can expect the druggist to be responsible for the drug treatment.

The *chemical and physiological part* of nutrition has grown so rapidly during the last decade that this, likewise, has become a field by itself with a literature so large that only the specialist can cover it. It would be unreasonable to expect either the dietitian or the physician to be an expert in this branch of the subject.

There still remains a great amount of information relating to the preparation of foodstuffs from the raw materials which comes within the scope of dietetics in its narrower sense. The dietitian proper should be able to take diets prescribed in very general terms—so many calories; so much protein, carbohydrate, and fat; a diet poor in salt; a diet containing 50 grams carbohydrate, etc.—and with these as a basis prepare satisfactory menus. In metabolism studies, where it is necessary to prescribe very strict diets prepared from a few substances of known composition, the strictly *dietetic part* may be very difficult. In nutritional studies on the lower animals this problem does not appear at all, but in studies of human nutrition successful results may depend to a considerable extent on how well this part of the work is done.

The three subdivisions of dietetics cannot be accurately delimited; they overlap. It is sometimes necessary in practice for the physician and dietitian to divide the chemistry of nutrition between them, and so cover the whole subject. But the three subdivisions should be recognized, and, when possible, each part of the work should be done by the proper specialist.

At the Robert Brigham Hospital, where we have given considerable attention to this subject, our method at present is as follows: First, the physician prescribes to the dietitian—with some explanation of its purpose—the basis for a preliminary dietary. The dietitian, after studying this list, and after consulting the patient's taste, may suggest slight additions, substitutions, and other alterations, which will permit the preparation of an attractive menu. The final basis for the dietary is prescribed after the physician has considered these suggestions, and the dietitian then makes out a set of daily menus. It may be necessary to modify the menu slightly further, especially the quantities given, after trial for a day or two.

EXAMPLES.

Diet I. The following basis for a 24-hour diet was prescribed:

3 eggs—which may be replaced in part by cheese, one ounce of cheese for one egg.
800 cc. milk.
600 grams potato—which may be replaced in part by bread, spaghetti, or rice in the following proportions: 20 grams potato = 8 grams bread = 5 grams rice.
56 grams butter.

In addition, once a day, a very little lettuce, or tomato, and a very little fresh or preserved fruit.

The dietitian suggested that the addition of a little sugar, flour, vinegar, and vanilla for cooking purposes, the substitution of olive oil for part of the butter, and the addition of flavor of vegetables for making soup (certain other changes which were suggested were not acceptable) would greatly improve the possibilities for menu making.

The second day the basis was raised to 4 eggs, 1000 cc. milk, 700 grams potato, 56 grams butter; and the third day to 4 eggs, 1200 cc. milk, 800 grams potato and 70 grams butter, and here it was kept.

The menu for the next six days follows.

Oct. 17	Eggs	Cheese	Milk	Potato	Rice Spaghetti Macaroni	Bread	Butter
		oz.	c.c.	gm.	gm.	gm.	gm.
Breakfast							
Scrambled egg.	1		20				7
Baked potato ..				100			
Bread, butter, milk			225			48	21
Dinner							
Soup (Cr. Spinach)			200				
Delmonico potato		1	80	200			7
Bread, butter, milk						48	14
Celery							
Baked custard.	1		75				
Supper							
Baked egg in rice nest	1				25		7
Bread, butter, milk			200			64	14
Ice cream			200				
Total	3	1	1200	300	25	160	70

Oct. 18	Eggs	Cheese	Milk	Potato	Rice Spaghetti	Macaroni Bread	Butter
		oz.	c.c.	gm.	gm.	gm.	gm.
Breakfast							
Poached egg on toast	1					24	11.7
O'Brien potato.			100	100			7
Toast, milk, butter			225			24	14
Dinner							
Baked macaroni *c* cheese		1	100		40‡		
Tomato salad *c* vinegar and oil							2*
Snow pudding.	1		250				
Bread, butter, milk			200			48	14
Supper							
Goldenrod egg	1		100				7
Baked potato .				200			
Bread, butter, milk			225			40	14
Orange							
Total	3	1	1200	300	40	136	67.7† 2*

* Oil. † Butter. ‡ Macaroni.

Oct. 19	Eggs		Milk	Potato	Spaghetti	Bread	Butter
		oz.	c.c.	gm.	gm.	gm.	gm.
Breakfast							
Baked potato .				100			
Toast, butter, milk			200			48	14
Soft cooked egg	1						
Dinner							
Bread, butter, milk			225			48	14
Escaloped spaghetti *c* egg	1		55		30		11.7
Lettuce (dr's'd)							2*
Ice cream	1		175				
Supper							
Soup			200				
Baked stuffed potato	¼		20	200			14
Bread, butter, milk			225			56	14
Baked custard	¾		100				
Grape fruit							
Total	4		1200	300	30	152	67.7† 2*

* Oil. † Butter.

Oct. 20	Eggs		Milk	Potato	Spaghetti	Bread	Butter
		oz.	c.c.	gm.	gm.	gm.	gm.
Breakfast							
Toast, butter milk			200			48	12
Cream toast ..			125			24	7
Omelet	1						
Dinner							
Soup (asparagus)			200				7
Potato salad ..				200			2*
Baked stuffed egg	1		75				7
Bread, butter, milk			200			48	12
Lemon soufflé *c*	¾						
foamy sauce	¼						
Supper							
Cream potato soup			200	100		32	8.7
Croutons							
Toast, butter, milk			200			24	14
Dropped egg on toast	1					24	
Cut fruit							
Total	4		1200	300		200	67.7† 2*

* Oil. † Butter.

OCT. 21	EGGS	CHEESE	MILK	POTATO	RICE MACARONI	BREAD	BUTTER
		oz.	c.c.	gm.	gm.	gm.	gm.
Breakfast							
Toast, butter, milk			200			48	14
Grapefruit							
Scrambled egg.	1		20				7
Dinner							
Soup, toast ...			200			24	7
Baked potato ..				200			
Egg *c* tomato salad	1						2*
Bread, butter, milk			200			24	11.7
Ice cream	1		160				
Supper							
Soup			200				7
Potato soufflé .	½		20	200			7
Bread, butter, milk			200			64	14
Orange fluff ..	½						
Total	4		1200	400		160	67.7† 2*

* Oil. † Butter.

OCT. 22	EGGS	CHEESE	MILK	POTATO	RICE MACARONI	BREAD	BUTTER
		oz.	c.c.	gm.	gm.	gm.	gm.
Breakfast							
Fruit							
Poached egg ..	1						
Toast, butter, milk			200			48	14
Dinner							
Soup, buttered toast points			200			24	7
Browned mashed potato ...			20	200			14
Bread, butter, milk			200			24	7
Cheese salad ..		1	10				2† 2*
Rice custard	1		100		14		
Supper							
Soup, toast sticks			170			25.6	4.7
Escal. macaroni *c* tomato					30		7
Bread pudding	½		75			24	7
c foamy sauce	½		25				
Bread, butter, milk			200			24	7
Total	3	1	1200	200	44	169.6	69.7† 2*

* Oil. † Butter.

Diet II. Basis for 24 hours after consultation with dietitian and patient:

3 eggs
26 ounces milk
100 grams bread
40 grams butter
6 grams oil
¾ ounce cereal
4 ounces cream
3 ounces potato
¾ ounce rice or spaghetti
½ ounce cheese

In addition, small quantities of vegetables (except peas, beans) and fruit; and small amounts of flour, vinegar, salt, pepper, and sugar for cooking purposes.

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Nov. 2.	EGGS	MILK	BREAD	BUTTER, OIL	CEREAL	CREAM	POTATO	RICE, SPAGHETTI	CHEESE
		oz.	gm.	gm.	dry oz.	oz.	raw oz.	dry oz.	oz.
Breakfast									
Farina *c* cream					¾	2			
Soft cooked egg	1								
Toast, butter, milk		6	50	12					
Peach									
Dinner									
Cream soup		6		4					
Baked potato ...				3			3		
Squash				3					
Apple and celery salad				3*					
Bread, butter, milk		6	25	6					
Ice cream	1					2			
Supper									
Baked spaghetti *c* cheese		2		6				¾	½
Egg salad	1			3*					
Bread, butter, milk		6	25	6					
Pear sauce									
Total	3	26	100	40† 6*	¾	4	3	¾	½

* Oil. † Butter.

Nov. 3.	EGGS	MILK	BREAD	BUTTER, OIL	CEREAL	CREAM	POTATO	RICE, SPAGHETTI	CHEESE
		oz.	gm.	gm.	oz.	oz.	oz.	oz.	oz.
Breakfast									
Grapes									
Farina *c* cream					¾	2			
Scrambled eggs	1	1½		4					
Toast, butter, milk		6	50	12					
Dinner									
Brown mashed potato *c* cheese		1		3			3		½
Bread, butter, milk		5	25	6					
Sprouts				3					
Spinach and egg salad	½			3*					
Baked custard..	½	3							
Supper									
Cream soup		4½		3					
Bread, butter, milk		5	25	6					
Fruit salad				3*					
Rice pudding *c* cream and jelly	1			3		2		¾	
Total	3	26	100	40† 6*	¾	4	3	¾	½

* Oil. † Butter.

Nov. 4.	Eggs	Milk	Bread	Butter. Oil	Cereal	Cream	Potato	Rice. Spaghetti	Cheese
		oz.	gm.	gm.	oz.	oz.	oz.	oz.	oz.
Breakfast									
Orange									
Farina *c* cream..					¾	2			
Soft cooked egg	1								
Bread, butter, milk		6	50	12					
Dinner									
Cream soup		4½		3					
Toast sticks			25	6					
Baked stuffed potatoes	⅛	½		6			3		
Lettuce and pimento salad ..				3*					
Boiled onions ..				5					
Milk		6							
Banana custard *c* meringue ..	⅞	1				2			
Supper									
Escal. spaghetti *c* egg	1	2		3				¾	
Pineapple, cheese, pepper salad .				3*					½
Bread, butter, milk		6	25	5					
Blackberries ...									
Total	3	26	100	40† 6*	¾	4	3	¾	½

* Oil. † Butter.

Nov. 5.	Eggs	Milk	Bread	Butter. Oil	Cereal	Cream	Potato	Rice. Spaghetti	Cheese
		oz.	gm.	gm.	oz.	oz.	oz.	oz.	oz.
Breakfast									
½ Grape fruit .									
Cereal *c* cream..				3	¾	2			
Omelet	1								
Bread, butter, milk		6	50	12					
Dinner									
Cream soup		5		3					
Boiled rice								¾	
Buttered beets .				3					
Cheese and nut salad				3*					½
Bread, butter, milk		6	12	6					
Ice cream	1					2			
Supper									
Shirred eggs ...	1	2	13	3					
Baked potato ..							3		
Green salad				3*					
Bread, butter, milk		7	25	10					
Baked apple ...									
Total	3	26	100	40† 6*	¾	4	3	¾	½

* Oil. † Butter.

Nov. 6.	Eggs	Milk	Bread	Butter. Oil	Cereal	Cream	Potato	Rice. Spaghetti	Cheese
		oz.	gm.	gm.	oz.	oz.	oz.	oz.	oz.
Breakfast									
Malaga grapes									
Corn flakes *c* cream					¼	2			
Scrambled eggs.	1	1½		3					
Toast, bread, milk		6	25	6					
Dinner									
Escal. potato ...		2		6			3		
Spanish omelet *c*	1			3					
Sauce { Tomato Onion Celery Olives									
Spinach salad ..				3*					
Bread, butter, milk		7	37	9					
Sherbet						2			
Supper									
Cream cheese sauce on toast		3		3					½
Escal. tomato *c* spaghetti				3				¾	
Devilled egg ...	1			3*					
Bread, butter, milk		6½	38	7					
Fruit sauce									
Total	3	26	100	40† 6*	¼	4	3	¾	½

* Oil. † Butter.

By separating the strictly dietetic part, and concentrating expert attention on this part of the problem it becomes possible to administer a diet of as strict and constant a composition from day to day as desirable, and at the same time to furnish the patient with a palatable and attractive menu.

The constituents of the diet given in the examples are a few homogenous substances of nearly constant composition, so that the intake in protein, carbohydrate, fats and calories can be fairly accurately calculated from food composition tables. In the two sample diets given, the intake and outgo of nitrogen very nearly balance.

NITROGEN BALANCE OF DIETS I AND II.

		Diet I.	Diet II.
Intake per day (calculated)		14.00	10.2
Outgo (by analysis)	1	13.64	9.7
	2	14.03	9.6
	3	15.30	10.0
	4	14.34	9.5
	5	13.89	10.6
	6	14.36	9.7
Average outgo		14.26	9.9

The importance of the psychical and esthetic side of eating is perfectly well recognized, and the healthy individual pays as much attention to menu-making as he can afford. But an invalid diet presents difficulties. The unscientific cook knows only hard and fast recipes, and finds it almost impossible to alter them to satisfy special nutritional requirements. And, consequently, going on an invalid diet or taking a restricted diet for scientific studies is generally looked upon as necessarily a hardship*; the invalid takes his calories, proteins, carbohydrates and fats as cheerlessly as he takes the rest of his medicine.† With the aid of the trained dietitian, who understands the *principles* underlying cooking and who is able to take unusual or limited combinations of food stuffs and turn them into palatable dishes,‡ all this is changing, and nutritional and metabolic studies are thereby greatly facilitated.

In some of our metabolic studies and dietetic treatments it has been necessary to prescribe diets whose basis appears very limited in variety, sometimes to spoiled and wealthy patients who wanted to be cured without inconvenience, sometimes to poor and ignorant patients who had little apparent understanding of what was being done for them. Yet I have a distinct impression that changing from house diet to one of our restricted diets has generally been looked upon, not as a hardship, but as a treat; the restriction in diet has apparently been less in evidence than the special attention the patient receives.

At the present time, when dietaries must be prepared on a large scale for troops, the direct application of the foregoing emphasis on specialization in the different parts of dietetics is obvious.

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A NOTE ON EXPERIMENTAL SCURVY IN THE GUINEA PIG.

BY W. C. RAPPLEYE, M.D., FOXBORO, MASS.,
Pathologist, Foxboro State Hospital.

MUCH research has been done during the last few years upon the so-called deficiency diseases, resulting in the development of several interesting and significant features. McCollom and Pitz[1] have reported comprehensive studies made upon experimental scurvy in the guinea pig, and have come to the conclusion that this disease is due to retention of feces in the cecum, which organ is unusually large and delicate in this species. The retention results from a diet which does not possess such physical properties as will lead to the formation of bulky, easily eliminable feces. The pasty feces resulting from such a diet are retained in the delicate cecum, putrefaction ensues with injury to the intestinal wall, absorption of toxins and bacteria may take place, resulting in the clinical features of scurvy.

The proof of this assumption is found when at post-mortem examination done on pigs dying from the disease, the cecum is found distended with putrefying feces, the upper intestinal tract and lower colon are usually empty. And, in addition, administration of laxatives to animals soon after the onset of symptoms of scurvy greatly benefits the animals, and administration throughout the experimental period either prevents or delays development of the disease.

The present note reports studies of a similar nature and embraces a further feature, as seen in the experiments done here. A number of pigs were kept on a diet of oats and milk, and the majority of them developed evidences of the disease in four to six weeks. At autopsy of animals dying of the scurvy so produced, the cecum of each animal was found distended with pale, pasty feces, and the extremities showed the usual signs of scurvy. Other animals were placed on a similar diet and after the development of the disease, were given liquid petrolatum or phenolphthalein, with undoubted improvement in the signs of scurvy. In no case, however, was it possible to restore normal health to the animals, though the small number of pigs so treated prevents attaching any significance to the adverse results. And in all probability the administration was begun at too late a stage in the disease to reasonably expect recovery. That there was improvement, however, was evident.

Knowing that the disease may develop on a diet which one might expect would yield bulky feces (such as oats and dry cabbage), a larger group of animals was placed on a diet of oats and hay, and these animals developed scurvy in from four to six weeks, as expected. Autopsies done on animals dying from scurvy developed on this diet showed well-formed feces in the lower colon, and firm but not necessarily impacted feces in the cecum. The gums, extremities and condition of nutrition were, to all appearances, similar to the conditions found in animals autopsied after fatal results on the diet of oats and milk. The feces were dark colored, and the amount of putrefaction was much less than that found in animals which had been on the diet yielding feces of less bulk. The amount of distention was also much less; the appearance of the cecum, colon and ileum was not especially abnormal. The consistence of the stools altered but little during the period of observation. Administration of laxatives after the onset of signs of scurvy benefited these animals also.

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* This lack of variety in regimes will be apparent to anyone who consults the examples of hospital diet lists given in the back of Friedenwald and Ruhräh's "Diet in Health and Disease."

† All that is said on this whole subject by one of the better recent books on dietetics is: "The form in which food is supplied is of no small consequence. It must be pleasant to the taste and smell." And this is typical of the way this subject is neglected.

‡ This subject of the general principles underlying food preparation is still very little developed. None of the text-books on dietetics treat it fully enough.

It is not evident why, if scurvy in the guinea pig is due primarily to impaction of feces in the delicate cecum, the pigs on a diet of oats and hay should develop the disease, when the degree of impaction is at least much less than that seen in animals on a diet yielding pasty feces, and the character of the feces not especially abnormal. It is obvious that the poorly balanced diet leads to malnutrition, and it may be that absorption of toxins and bacteria from the intestinal tract may be attributed more directly to that factor, which probably involves the intestinal mucosa quite as much as other tissues. However, this note does not purport to be a discussion of the etiology of scurvy.

The presumption that a certain degree of the inspissation of the feces is due to a late or terminal feature of the disease seems to be borne out by the fact that the feces of animals killed before the very last stage of the disease are less abnormal than those found in animals at death. During the last stage of the disease, the animals are unable to move about and to secure water, and it is possible that a certain, though probably a small, degree of the fecal condition is due to this factor.

Blood cultures made on animals dying from or killed during the study were uniformly sterile. The histo-bacteriological studies of the tissues have not been done as yet.

It is of interest to note that a group of rabbits placed on the same diet of oats and hay showed no symptoms, save a loss of flesh, after four and a half months. One side of their pen was the basement wall, which had been whitewashed and the rabbits had eaten off the whitewash as high as they could reach. The rabbits in four other pens similarly arranged, and which were on a general diet, did not do this. Whether the calcium in the whitewash had anything to do with the prevention of scurvy or malnutrition was not determined.

SUMMARY.

Scurvy can be produced in guinea pigs on a diet which yields bulky feces, such as oats and hay. Autopsies on animals dying as a result of the disease which has developed on this diet show the usual findings seen in this disease and, in addition, a condition of the intestinal tract not far removed from normal. This is in contrast to the findings of an empty lower colon, impacted cecum, and pasty, putrefying feces, as seen in scurvy produced by a diet of oats and milk, and which features have recently been emphasized by McCollum and Pitz in their discussion of "The Vitamine Hypothesis and Deficiency Diseases" as the essential causative factor in this disease.

Blood cultures of animals with scurvy yielded uniformly negative results.

REFERENCES.

[1] McCollum, E. V., and Pitz, W.: Jour. Biol. Chem., 1917, Vol. xxxi, No. 1, 229-253.

Clinical Department.

INTRAPARTUM RUPTURE OF UTERUS AND BLADDER: RECOVERY. SUBSEQUENT CLOSURE OF VESICAL FISTULA.

By George T. Tyler, Jr., M.D., Greenville, S. C.

Mrs. A. S. B., aged 35; ii-para. The previous history was unimportant except that the labors were difficult—one instrumental. She was seen by her physician for the first time Nov. 18, 1917, while in labor (the third). He had been with her about an hour, had used no pituitrin or other uterine stimulant, when the pains, which were vigorous, suddenly ceased. On examination, the head, previously on the perineum, could not be felt. A diagnosis of ruptured uterus was made, and the patient was sent to the hospital for immediate operation.

Under ether she was catheterized, but only a few drops of blood were obtained. The abdomen was opened, the dead child removed with much blood. The uterus was ruptured throughout the length of the cervix and the lower body, just to the left of the median line. The bladder was included in the tear. A supravaginal hysterectomy was done. After the uterus had been amputated, the patient was given intravenous salt solution as her condition was desperate. The wound was then closed with drainage, and the patient returned to bed. She responded to stimulants, and in a few days was out of danger.

Incontinence of urine, of course, resulted. Cystoscopy eight days after operation revealed a transverse tear behind the inter-ureteral ridge, about 5 x 2 cm. The urine escaped through the torn cervix, the anterior lips of which were widely separated. It was planned to close the fistula on the tenth day, but the patient developed an adynamic ileus, which delayed operation for a week.

Through a suprapubic incision the bladder was opened. The fistula was closed without tension on the right; but as the left side was approached it was found necessary to divide the bladder down to the tear, for the relief of tension. The wound was closed with drainage to the bladder, and a retention catheter placed in the urethra. There was no leakage until the seventh day, when urine again escaped through the vagina. Examination two days later showed that the sutures on the left side near the ureter had broken down. Silk stitches, used in ligating the uterine arteries at the former operation, could be seen through the opening in the bladder. The patient could prevent continuous leaking by lying on her abdomen and having a bed pan placed under her when she turned on her back.

It was thought best for the patient to go home for Christmas, and return later for closure of the fistula. In January, 1918, she returned, but there was so little leaking that she preferred to wait longer. In March, 1918, the opening in the bladder had contracted to 1 cm. in diameter. At this time the silk stitches previously noted were removed. They could be pulled down into the vagina through the cervix, and were divided with scissors.

In April, 1918, five months after the bladder was ruptured, a second attempt was made to close the fistula. I tried this by the perineal route, using Schuchardt's para-rectal incision, so graphically described by Dr. George Gray Ward, Jr., in *Surgery, Gynecology and Obstetrics*, August, 1917. Without this procedure it would have been impossible to operate from below, as the opening in the bladder communicated with the cervix just below the peritoneal covering. The anterior vaginal wall was incised longitudinally, the incision beginning 5 or 6 cm. anterior to the cervix, and extending back to it. The bladder was dissected as wide as necessary to prevent tension on the sutures. A female metal catheter in the bladder served as a guide to expose the fistula. The cervix was circumscribed and dissected as far as possible, especial effort being made to remove the mucosa. Lembert sutures of chromic catgut closed the bladder. A second row, including whatever remained of cervical tissue, reinforced the first. These last sutures did not approximate the tissues completely, for fear that too much tension might be put on the bladder. The vaginal mucosa was then closed, and a retention catheter inserted into the bladder. It was very little trouble to close the para-rectal incision. A small drain was left in this wound. The patient made a good recovery. The catheter was removed on the 7th day, and the patient left the hospital on the 14th day. There has been no leakage up to the present time—one month after operation.

Aside from the recovery of the patient, the interesting feature of this case is the successful closure of the vesico-cervical fistula by the para-rectal incision of Schuchardt. The incision is simple, injures no important structures, and provides an excellent exposure.

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A CASE OF FRACTURED PELVIS WITH RUPTURE OF THE BLADDER IN AN INFANT UNDER TWO YEARS, WITH RECOVERY.

BY ROBERT W. ANGEVINE, B.S., M.D., ROCHESTER, N. Y.,
First Lieutenant, M.R.C.

A FEMALE baby, 23 months of age, was recently admitted to the accident room of the Rochester General Hospital, suffering from injuries received in an automobile accident. According to the history, a rear wheel of a five-passenger automobile passed over the child's pelvis and lower abdomen.

The baby presented but few symptoms of shock, but was restless. Pain apparently was not great. Few physical signs were present. There were several superficial abrasions marking the line of passage of the wheel across the pelvis. The abdomen was slightly more tense than normal. There was no spasm or rigidity of abdominal muscles. No fluid wave could be made out, but flatness in the lower flank could be noted when the child was placed on either side.

An x-ray, taken immediately, indicated an oblique fracture of the left ramus of the pubis within 3-4 inch of the symphysis. Catheterization gave an ounce of fluid, containing a large proportion of fresh blood. An hour after the accident, a small catheter was passed and six ounces of sterile salt solution were injected into the bladder. Subsequent catheterization within five minutes yielded only two and one-half ounces of fluid, containing blood.

Under ether anesthesia, a mid-line incision one and one-half inches long was made just above the symphysis. Free fluid, containing blood and having a urinary odor, was present in the abdominal cavity. Inspection of the bladder showed a tear three-fourths of an inch long, extending antero-posteriorly along the bladder-wall. This was stitched with catgut and the abdomen closed, a small rubber drain having been fixed in place and a catheter passed. The drainage was removed after forty-eight hours. After operation, the child was placed in a canvas hammock swung over a crib.

The temperature did not exceed 100° at any time. The child made a good recovery after a convalescence without complications.

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Book Reviews.

The Diagnostics and Treatment of Tropical Diseases. By E. R. STITT, A.B., Ph.G., M.D. Second Edition. Philadelphia: P. Blakiston's Son & Co. 1917.

In the second edition of this manual of tropical diseases, two new chapters, one dealing with typhus fever, the other with spotted fever of the Rocky mountains, have been added to Part I. Part II, the section dealing with the diagnostics of tropical diseases, also includes two new chapters, concerning the special problems of diagnosis in the tropics and the diagnostic value of clinical manifestations from the side of the cutaneous system and organs of the special senses. The entire book shows an advanced knowledge of the etiology and treatment of tropical diseases. The majority of these diseases are classified as those due to protozoa, to bacteria, to filterable viruses, infectious granulomata, and tropical skin diseases.

Microbiology. Edited by CHARLES E. MARSHALL. Second Edition. Philadelphia: P. Blakiston's Son & Co. 1917.

This volume, "Microbiology," is an introductory text-book of microörganisms, general and applied, to which many authors have contributed. Its purpose is to provide for college students an elementary technical treatise of the subject, to be used for recitation, and as a supplement to lecture and laboratory courses. The text is systematically divided into three parts: the first deals with the morphology and culture of microörganisms, and describes the elements of microbial cytology, molds, yeasts, bacteria, invisible microörganisms, and protozoa. The second part deals with the physiology of microörganisms, including such subjects as nutrition and metabolism,—food of microörganisms, the products and mechanism of metabolism,—and the physical, chemical, and mutual influences. Part three discusses applied microbiology, and deals with microbiology of air, water and sewage, soil, milk and milk products, of special industries,—such as desiccation, evaporation, preservation by heat, cold, or chemicals, the manufacture of vinegar, vaccines, and antisera,—and microbial diseases of plants, insects, man, and domestic animals.

A Manual of Nervous Diseases. By IRVING J. SPEAR, M.D. Philadelphia and London. W. B. Saunders Company. 1916

This book is an attempt to condense into one small volume the essential facts of the anatomy, and physiology of the nervous system, together with descriptions of the important nervous diseases. It is by no means to be regarded as among the "quiz compend" class of books, but succeeds to a surprising extent in attaining the author's object. The only serious lack we have discovered in the book is that of a failure to give in sufficient fulness the essential facts in regard to the methods of examination of the cerebro-spinal fluid, especially important in syphilitic diseases of the nervous system. Though this examination is spoken of under syphilis of the nervous system, the methods are not given very fully, and reference to the spinal fluid does not always appear where we have a right to expect it. On the whole, however, the defects of the book are chiefly those due to the limitations imposed upon the author by his plan, and so unavoidable.

Psychological Medicine. By MAURICE CRAIG, M.A., M.D., (Cantab.), F.R.C.P. (Lond.) Philadelphia: P. Blakiston's Son & Co., 1918.

This treatise on mental diseases has the merit of so many English books on the same subject of being clear and adequate in its descriptions of clinical forms of such diseases. Though praising Kraepelin's classification of mental diseases the author does not adopt this, but still clings to some of the older types of disease, such as mania, and depression, puerperal and climacteric insanities, terms which at the present time have grown to be almost meaningless.

The chapters on imbecility and the insanities associated with general diseases such as hysteria, myxedema, and chorea are welcome additions to a book on mental diseases. The chapter on the psychoneuroses occurring in the war is exceedingly brief, and advances in the understanding of these cases will require the rewriting of this chapter in any future edition of the book. The changes in the cerebro-spinal fluid in paresis also deserve fuller discussion.

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REPORT OF THE CHAIRMAN OF THE COMMITTEE ON MEDICINE AND SANITATION.

THE Advisory Commission of the Council of National Defense has issued a pamphlet summarizing the civilian medical activities in connection with the war to April, 1918. The report is written by Dr. Franklin Martin, Chairman of the Committee on Medicine and Sanitation.

The Council of National Defense is composed of six members of the President's Cabinet—the Secretaries of War, Navy, Interior, Agriculture, Commerce, and Labor. The council nominated and the President appointed an advisory commission of seven specially qualified persons, each having knowledge of one great field. The chairman of the Committee on Medicine and Sanitation of the Commission was authorized by the council to organize the General Medical Board for the purpose of aiding in the enormous expansion of the various Government bureaus and coördinating with their work the resources and talent of the civilian medical profession. Control of the previously authorized State and county committees was assumed by the General Medical Board. Names of representative medical men were submitted by the chairman and they were appointed to the board by the Secretary of War. The board thus represents the civilian population in its relation to the four Government administrative offices of the Surgeons-General of the Army, Navy, Public Health Service, and the Red Cross, and through it the organization for war of the medical profession is being carried out.

To the Committee of American Physicians for Medical Preparedness was delegated the duty of formulating plans whereby the civilian medical resources of the United States might be effectively coördinated for such purposes as might be required by the Federal Government. To this end, the committee made a survey of hospitals and sanatoria to discover the capacity of 1700 of the leading institutions of the country and their facilities for caring for military and civilian needs.

Further activities of the Committee on Medicine and Sanitation extended to the Medical Reserve Corps; 20,000 selected men were communicated with and urged to enroll. Letters were sent to pharmacists, sanitary engineers, and ambulance drivers, advising them as to where they could be of most service to the Army. The Committee on Standardization was authorized for the purpose of standardizing essential medical and surgical supplies and equipment, to increase speed and reduce cost of production. Another division investigated medicinal products for the offices of the Surgeon-General of the Army and of the Bureau of Medicine and Surgery of the Navy, and the elements which could be released for explosives were ascertained.

The General Medical Board has coöperated with the Government Departments of Medicine, Surgery, and Sanitation. At a meeting held on April 9, 1917, the following recommendations were considered and approved:

1. Request of the American Red Cross that the legislative committee endeavor to secure through the enactment of proper legislation a place in Washington, D. C., for the storage of medical supplies to be furnished by the American Red Cross to the Army.

2. Survey of available supply of medical men for military and civilian needs.
3. Immediate assignment by the Surgeon-General of two medical reserve officers in each State to make personal canvass of their respective States for the purpose of increasing the enrollment of medical men in the Reserve Corps.
4. Coöperation of the Committee on Research with the National Research Council in its activities.
5. Conservation of the source of supply of medical men—namely, third and fourth year medical students—by recommending that they complete their medical education, in order that the Government might receive the benefit of their trained services upon graduation.
6. Plan of the Committee on Dentistry to increase the personnel of the Dental Corps of the Army and Navy, and to mobilize the dental facilities of the country for military needs.
7. Classification of the staffs of hospitals according to availability for immediate military service and institutional needs.

Immediately upon the arrival of the British and French commissions in this country, in April, 1917, the chairman communicated with Mr. Balfour and members of the Joffre Commission concerning the need for medical men and supplies in the war zone. As a result of this conference he recommended to the Surgeon-General's Office that 10 base hospitals, with personnel sufficient for 1000 beds each, and 2000 ambulances be sent to France and attached to the French and British forces. Within a month base hospitals were on the other side in the service of the Allies.

On June 11, 1917, the Executive Committee of the General Medical Board appointed a committee to investigate plans for cantonments and location of camp sites. As a result of this committee's investigations, on June 13 a recommendation was made to the Secretary of War that a regulation be made and enforced that the selection of camp sites and all plans for the construction, repair, and location of buildings, water supply, drainage, sewage disposal, and other matters relating to hygiene and sanitation be submitted to the Surgeon-General or his representative for approval before work was started. The Secretary approved the recommendation, and the regulation was made.

On June 2, 1917, a conference, called by the chairman of the General Medical Board, was held to consider the matter of reconstruction of wounded soldiers and sailors and their reeducation for return to civil life upon discharge from the Army and Navy.

As a result of this meeting the Committee on Re-education and Rehabilitation of the General Medical Board was appointed. This body met frequently, and as a result of its recommendations the chairman of the General Medical Board presented to the Secretary of War a plan for the formation of a reconstruction board, upon which would be represented the following departments and interests: United States Army, United States Navy, United States Public Health Service, American Red Cross, Council of National Defense, hospitals and laboratories, medicine and surgery, vocational education, labor and industry.

The Secretary of War instructed the Surgeon-General to call a conference in Washington on January 14, 1918, to which representatives of the departments interested were invited for the purpose of formulating a definite plan of action. A bill was drafted which is now before Congress, providing for the vocational rehabilitation and return to civil employment of soldiers and sailors disabled in the line of duty.

Special committees of the General Medical Board have investigated such problems as child welfare, civilian coöperation in combating venereal disease, dentistry, hospitals, hygiene and sanitation, industrial medicine and surgery, legislation, medical advisory boards and schools, nursing, and research work.

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VITAMINE CONTENT OF CEREAL FOODS.

It is now pretty well understood that the mere balancing of the ration is not sufficient to insure adequate nutrition unless the food elements also contain a sufficient amount of the accessory food elements in the form of vitamine. Nearly every food contains a vitamine of its own, which, however, is not self-sufficient, and must be consumed with vitamines of other foods. There must be a mixture of vitamines as of other food elements. It has long been supposed that the cereal foods were particularly poor in vitamines, especially in such vitamines as acted to prevent beriberi, pellagra, scurvy. However that may be with respect to pellagra, it now seems certain that the cereals contain an abundant amount of antineuritic vitamine. The vitamine in cereals is contaied in the peripheral layers and in the germ. It is lacking in the endosperm. It is the polishing of rice with its removal of the peripheral vitamine-bearing layer that is the cause of beriberi. Similarly, the high milling of flour removes not only the peripheral layer, but the kernel as well, and causes rapid loss of weight and neuritic symptoms in experiments on fowl. Modern milling methods remove about 30% of the product and that part which is so highly important because of its antineuritic vitamine content. Even aside from nutritional grounds, the important question of food conservation at this time should operate to prevent high milling and the resultant waste.

While it is true that the addition of yeast to the flour delays for a long time the onset of neuritic or nutritional disturbances, it does not prevent them. On the other hand, the use of whole cereal products does not produce neuritic symptoms in the animals under experimentation, and the addition of the whole products or experimentally of the extract of the whole cereal acts as a curative in cases that have already developed the characteristic disturbances. It is true that some of the cereals contain more vitamine than others, or that a cereal product at one time may contain more vitamine than the same cereal at other times. The amount of vitamine a cereal contains at a given time is indicated by the amount of phosphorous pentoxide that it contains, because the amount of vitamine and the amount of phosphorus are the same. Both of them are, of course, contained in the periphery and in the germ. The cereal foods are still the cheapest, although valuable foods, and it would be highly undesirable to destroy their value as foods by any artificial process which would deprive them of their vitamine content. Because of war necessity, white bread is going out of use very rapidly, and it would be highly beneficial if it would remain out in post-war times.

THE PREVENTION OF PUERPERAL SEPSIS.

SINCE Semmelweis and Holmes made their important observations on the causes of the high puerperal mortality from septic infections introduced by students and others from the dissecting laboratory, the necessity for strict asepsis during parturition is no longer an open question. During labor the parturient canal presents the best possible medium for the growth of pathogenic organisms. No degree of aseptic precaution, even to the degree of that observed in major surgical operations, is too much for observing during labor. Yet, in spite of the strictest aseptic precautions, there is still too much puerperal sepsis. No matter what the precautions taken, too frequent vaginal examination of the parturient woman encourages infection. This is particularly likely to happen in patients who have had septic infections in previous labors. For these patients, vaginal examinations should be almost entirely interdicted. There is, fortunately, a growing tendency to substitute rectal examination for the usual vaginal examinations wherever possible. As far as possible, the position of the child and the progress of labor should be judged by external examination. The progress of the head into and through the pelvis can be determined by following the changing location of the fetal heart sounds. The necessity for frequent vaginal examinations is particularly reduced by a knowledge of the pelvic dimensions gained by accurate measurements during the pregnancy. It must be appreciated that the relation of the fetal parts to the known measurements of the pelvis can be determined fairly accurately by measurements through the abdominal wall of the mother. With these points at hand the vaginal examination can be dispensed with, even if the rectal examination must be retained to determine cervical dilatation.

As a last and important factor in the reduction of puerperal sepsis, the possibility of hematogenous infections should not be overlooked. Every focus of infection in the body, no matter how trivial, may be responsible for a severe and perhaps even a fatal attack of puerperal sepsis. The most frequent focal infection that operates in this respect is infections of the tonsils and teeth. These must be constantly guarded during pregnancy. Any caries or infections should be promptly cleared up, and examinations made frequently enough to discover new dental conditions should they arise. Unless every avenue of infection is knowingly closed, there is no justification for calling a case of puerperal sepsis where aseptic precautions have been observed during labor idiopathic.

CARDIAC SYPHILIS.

UNTIL rather recently very few were accustomed to think of the complications of syphilis in terms of the heart. Yet it is probably one of its most frequent complications, and of the most serious immediate significance. Of course it was well understood that arteriosclerosis and aneurysm had much to do with syphilitic infection when occurring in comparatively young individuals. In these conditions the effects were believed to be indirectly caused by syphilitic infection. But in cardiac syphilis the condition is the result of lymphocytic infiltration and subsequent fibrosis. The demonstration of the spirocheta pallida in the cardiac tissues has been frequently accomplished. Aortic disease, when uncomplicated with other valve lesions and occurring in young individuals, has long been recognized to be of syphilitic origin. Acute endocardial infection of rheumatic origin rarely affects this valve alone. While aortic disease was believed to be the most frequent cardiac complication of syphilis, occurring in about 78% of the cases, it is now found that general cardiac syphilis is even more common, occurring in about 88% (Waethin, *Journal Medical Science*, clii, 508). Syphilis affects the endocardium, myocardium and the pericardium. Previously cardiac syphilis was thought to be entirely a tertiary lesion, but it is now known to occur in the secondary as well as in the tertiary stage. Even in congenital syphilis is cardiac syphilis common. It takes the form of a diffuse myocardial infiltration, with the presence of the spirochetae in the tissues. Cardiac subjective physical symptoms may all be present in the syphilitic cases, as well as such objective signs as enlargement, thrills and murmurs. Decompensation is extremely likely to occur and is of extremely grave prognostic significance. In all likelihood, every case of syphilitic infection is accompanied by cardiac involvement. Often it is the only involved organ that gives symptoms, the disease not being suspected before. Symptoms of aortic disease in individuals under fifty are now taken as an almost infallible sign of syphilitic infection. In any case, aortic disease is of a chronic nature. Cure is not to be expected. Improvement can, however, be expected when recognized early. But treatment must be intensive and persisted in until positive changes for the better occur. Other than antisyphilitic treatment, the cardiac disease rarely needs treatment except in decompensation.

MEDICAL NOTES.

Epidemic of Spanish Grippe in Switzerland.——An epidemic of Spanish grippe has invaded Switzerland and is spreading rapidly, attacking particularly persons under forty years of age. Several deaths have occurred among interned British prisoners at Chateau Dex, and a military doctor at Soleure has died from the grippe. On July 9 there was said to be 6800 cases in the Swiss Army.

National Health Work Centralized.—President Wilson has placed all sanitary and public health activities carried on by executive bureaus, agencies and offices created during the war under jurisdiction of the Public Health Service. The order was promulgated to avoid confusion in policies, duplication of effort, and to bring more effective results and unity of control. It does not affect jurisdiction of the medical departments of the Army and Navy or of the Provost Marshal-General in performing health functions of a purely military character; nor is it designed to prohibit investigations by the Bureau of Labor Statistics of vocational diseases, shop sanitation and hygiene.

Dangers in Dust.—An interesting investigation of dust has recently been made by M. Burnet of the research laboratories of the Pasteur Institute in Paris, the object of the investigation being to determine the presence of tubercle bacilli in various places. Samples of fresh dust were taken from the streets which, being much used for traffic, are constantly swept. Others were taken from the passages and aisles of theatres, movie shows and the waiting rooms of department stores. The number of samples, thirty-six in all, was not large, but the bacillus of tuberculosis of virulent type was found in three of the eighteen fresh samples. No one of the dusts contained proteus, but anaerobic members of spore-forming types were present. Perfringens, sporogenes, and the germ of tetanus were isolated, and the latter was found in one-third of the samples. M. Burnet was unable to find the *vibrion septique*, although it should e a constant microbe of the earth.

The Spanish Epidemic.—In a recent issue of the Journal we commented on the epidemic at that time prevalent in Spain. The following further description of this epidemic has appeared in a recent issue of the *Medical Press and Circular*.

"The disease, the causation of which is at present obscure, which appeared in Madrid a few weeks ago, is rapidly spreading. It is stated that in Madrid alone there have been over 100,000 cases, and that already nearly 1000 persons have died. The condition is described by Dr. Pittaluga, in an article in the *Sol*. He states that the disease appears suddenly without premonitory symptoms, accompanied by severe headaches during a few hours, high fever, throat irritations or slight bronchitis, with a dry hacking cough and complete loss of appetite; muscular and articular pains, general debility, and gastric disturbance. The second day is marked by profuse perspiration, the fever diminishes, and disappears on the third or fourth day, the cough being accompanied by expectoration. The disease attacks the respiratory organs, rather than the intestines, men more than women, children scarcely at all. Many are attacked twice within a few days. Although the disease is clearly of a grippal character, bacteriological examinnation reveals the absence of the influenza bacillus and the presence of one described as *parameningococcus*. Dr. Pittaluga suggests that these germs acquired during the spring special virulence in the immense agglomerations of humanity on the Western front by a process of natural selection, and were carried thence to other centers of population, where the infection spread rapidly through the respiratory organs. The best preventives are fresh air, cleanliness, and constant disinfection; cures are effected rather by careful dieting than by medicine."

WAR NOTES.

Bay State Commissions.—The following appointments in the Medical Reserve Corps have been announced:

Captain: S. C. Cox, Holyoke.

First lieutenants: S. L. Marnery, A. D. Vamvas, Homeopathic Hospital, Boston.

Brockton Physician Promoted.—Dr. Henry J. Lupien, of Brockton, who enlisted in the Medical Officers' Reserve Corps several weeks ago, has been commissioned a second lieutenant. He is the eleventh doctor to leave Brockton for war service.

Harvard Medical Student Captured.—George T. Roe, formerly a Harvard Medical School student, has been captured by the Germans while in service as a naval aviator, and is now being held a prisoner.

War Relief Funds.—War Relief funds have reached the following amounts:

Belgian fund	$682,568.54
French Orphanage fund	380,437.06
French Wounded fund	375,225.41
Italian fund	182,308.82

Course in Orthopedic Surgery.—Three captains in the Medical Reserve Corps, Charles A. Cahn and Emerson Megrail, from Camp Pike, Little Rock, Arkansas, and Howard R. Dudgeon, from Camp Greenleaf, Fort Oglethorpe, Georgia, have registered and are ready to start a two months' course in orthopedic surgery at the Harvard Medical School. This study will be under the direction of Major Robert W. Lovett.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending July 6, the number of deaths reported was 201, against 211 last year, with a rate of 13.36, against 14.25 last year. There were 28 deaths under one year of age, against 29 last year.

The number of cases of principal reportable diseases were: diphtheria, 42; scarlet fever, 8; measles, 103; whooping cough, 40; typhoid fever, 2; tuberculosis, 60.

Included in the above were the following cases of non-residents: diphtheria, 9; scarlet fever, 2; measles, 2; whooping cough, 1; typhoid fever, 1.

Total deaths from these diseases were: diphtheria, 5; measles, 3; whooping cough, 6; typhoid fever, 1; tuberculosis, 17.

Included in the above were the following non-residents: diphtheria, 4; whooping cough, 1; tuberculosis, 3.

Board of Health of Worcester.—The annual report of the Board of Health of the city of Worcester for 1917 shows a mortality rate of 14.88 per thousand, the number of deaths being 2791. 4834 cultures for diphtheria, of which 333 were positive, were examined during the year, and 159 Widal tests for typhoid bacilli, of which 24 were positive, were made. 377 cases of scarlet fever, 62 of typhoid fever, 333 of diphtheria, 402 of pulmonary and laryngeal tuberculosis, 6 of infantile paralysis, and 39 cases of smallpox were reported. There were 12,760 persons vaccinated.

The report of the school nurse shows that the results of this department have been gratifying; the total number of visits was 1608.

Belmont Hospital has treated 570 patients. An appropriation of $47,000 has been made for the erection of a new ward for minor infectious diseases.

The inspectors of meats, provisions, and milk have endeavored to maintain the highest standards. 3009 visits were made to markets during the year.

NORTHAMPTON STATE HOSPITAL.—The sixty-second annual report of the Northampton State Hospital has been submitted for the year 1917. The report shows that the daily average of patients supported was 994.42. The total amount expended for maintenance was $270,294.51. To relieve congestion, the Commission on Mental Diseases transferred one hundred and thirteen patients during the year to Grafton State Hospital, to the Gardner State Colony, and to the Monson State Hospital. This has afforded only temporary relief, however, and it is necessary that the institution be enlarged in some way. Separate buildings are needed, also, for nurses and attendants. Several changes have been made on the medical staff during the year. Clinics have been held regularly each month at Springfield, Pittsfield, and Greenfield. Statistics relative to patients may be found in tables appended to the report.

SURVEY OF NURSING RESOURCES.—The Massachusetts State Nurses' Association has published a survey of nursing resources for Massachusetts. The membership of the State Association amounts to 1300. County associations total a membership of 3997. There are 3997 graduate registered nurses, 2009 graduate nurses not registered. The number of Red Cross nurses in service totals 1184, of whom 119 are in foreign units. 4095 persons have taken the Elementary Hygiene and Home Nursing Course and were awarded certificates. There are 756 attendants, trained and in training, and 1282 domestic nurses. The total number of student nurses in training schools amounts to 5599. The total number of persons giving nursing service is 12,541.

JEWISH WOMEN'S HOSPITAL.—The Jewish Women's Hospital Association established a Maternity Clinic in Boston in 1916. It has proved to be of great usefulness to the community. Three hundred and eighty patients have been treated. The Social Service Department has made three hundred home visits before confinement and many follow-up calls. The coöperation of the District Nursing Association has been invaluable.

The future needs of this organization consist of: provision for expert medical advice on certain cases, the securing and retaining of competent house officers, the extension of the work of the Social Service Department, and district nursing help in communities not covered by the Boston organization.

FRAMINGHAM COMMUNITY HEALTH AND TUBERCULOSIS DEMONSTRATION.—The Community Health and Tuberculosis Demonstration of Framingham has issued a second monograph, describing another phase of the $100,000 experiment which is being undertaken against tuberculosis. This is the first publication of the medical series, and presents the results of health census, medical examination, tuberculosis survey, and other allied activities.

The chief steps taken in this survey included thorough local publicity, the selection of fourteen agents and twenty nurses to aid in the work, the preparation of a census form with a set of instructions, the securing from the several insurance companies of the names and addresses reached by them, and home visits. Thorough medical examinations were provided for those who wished it.

The results of this work show that such a health census may be readily associated with community-wide medical examination work. Of the 1455 families enumerated in the census, 649 were later examined. 6582 people were enumerated in this sickness census. 38 cases of positive or suspected tuberculosis were discovered. The health census proved to be a valuable source of information along social and morbidity lines, particularly regarding tuberculosis, prenatal work, and infant welfare.

Statistics show that the most common illnesses were colds, heart disease, rheumatism, diseases of the stomach, tuberculosis, "coughs," bronchitis, influenza, "nervousness," diseases of the kidneys. There was a relatively high percentage in the advanced-age period. The sickness rate in Framingham was 1.8%. The American and Italian groups were the predominating types covered in the census. The percentage for families in good economic condition was 5.2; for families in fair, good, and bad economic condition, 7.4; and for families in unknown economic condition, 5.2.

The monograph includes a sample leaflet used in preliminary publicity and instructions on the use of the health census cards.

NEW ENGLAND NOTES.

Crane Sanatorium Approved.—Dr. Charles E. Banks, chief medical adviser of the Bureau of War Risk Insurance, has indorsed the erection of the Crane Sanatorium for tuberculous persons.

This institution would permit the treatment of many New England soldiers within easy access of their relatives and friends who otherwise would be sent West or South, many miles from home. The indorsement reads as follows:

"The proposed institution which you are to establish for the treatment of tuberculosis appeals to me as one of the most important of the secondary war measures which can be undertaken at this time.

The increase of tuberculosis in the National Army following the draft, resulting in the development and discovery of approximately 10,000 cases, indicates the extent to which the public health is menaced by the return of these discharged soldiers to civil life. I regard the establishment of institutions of this character of primary importance to the civil population among which they are to live, unless suitable provision is made for them in institutions like your own, which do not exist in adequate number.

I have no hesitation in recommending this as an absolute necessity under present conditions, and believe that it should not be classed as non-essential enterprise subject to ordinary conditions which govern the employment of capital. The Bureau of War Risk Insurance can make the most ample use of it when completed, as it has found difficulty in securing adequate accommodations under existing conditions."

Gift of $300 to Rockport Hospital.—By the will of Loring Grimes of Rockport, Maine, the sum of $300 has been given to the Leander Haskins Hospital.

RECENT DEATHS.

Daniel Joseph Finegan, M.D., died at Gloucester, his home, June 15, 1918, aged 49 years. Dr. Finegan joined the Massachusetts Medical Society in 1907, and had been a Councilor from the Essex South District Medical Society since 1915. He was a graduate of the Tufts Medical School in the class of 1902.

Dr. William Sidney Severance, dean of physicians in Franklin County, died in Greenfield, on July 1, at the age of 89. He was born in Leyden on March 24, 1829. In 1853 he completed a medical course at the Eclectic Medical Institute in Cincinnati, Ohio. For more than 50 years Dr. Severance continued in active practice.

Dr. John G. Lane died at his home in South Boston on July 6. He was born in Philadelphia in 1854. He graduated from Trinity College, Dublin. He returned to Boston about 35 years ago and started practice in Cambridge, and shortly afterward settled in South Boston where he became one of the most successful physicians and surgeons of that district. Dr. Lane was a member of the South Boston Medical Society.

Dr. Loring W. Puffer died at his home in Brockton on June 30, at the age of 89. Dr. Puffer was born in Stoughton in 1828. He was a graduate of the Boston Dental College, where he became professor. He practised dentistry until about 16 years ago, when he retired, to devote himself to his real estate and insurance business and to newspaper writing. He was editor of the *Brockton Advance* and the *Brockton Eagle*. He was a member of the Old Bridgewater Historical Society, the New England Historical and Genealogical Society the Natural History Society of Boston, the Massachusetts Press Association, one of the founders of the Brockton Agricultural Society, a former trustee and vice-president of the Plymouth County Agricultural Society.

Dr. John E. Somers, for 40 years a practising physician in Cambridge, died recently at the Massachusetts General Hospital, as a result of edema of the throat brought on by an operation. He was born in Antigonish, N. S., 67 years ago. He was educated at the St. Francis Xavier University of Nova Scotia, and attended the Bellevue Hospital and the Harvard Medical School, from which he graduated in 1875. In 1897 he spent a year in the hospitals of London, Paris and Vienna. In 1900 he went to Vienna for another year's experience in the hospitals there. He was a member of the Massachusetts Medical Society, the American Medical Association, the Boston Medical Association and the Cambridge Improvement Society. He was a member of the original board of directors of the Holy Ghost Hospital of Cambridge.

Dr. Frank Chase Richardson, for 39 years a specialist in nervous diseases in Boston, and for years Professor of Neurology at Boston University School of Medicine, died on June 20, at the summer home of Dr. Nathaniel Emerson of Boston.

Dr. Richardson had been suffering for some time with lung trouble. He was born in 1859 in Boston, of old New England ancestry and was educated in the public schools and Boston University, where he took his degree of M.D. in 1879, beginning practice immediately afterward.

He took a post-graduate medical course in New York and later attended both Harvard Medical School and a medical school in Vienna, Austria.

Dr. Richardson had held high positions in the Homeopathic Hospital. He had lectured much throughout the country on brain and nerve diseases.

Dr. Richardson belonged to the Homeopathic Medical Society and other medical organizations.